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ORIGINAL ARTICLES.

THE ETIOLOGY OF DIPHTHERIA.[1]

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FOR several years it has been the opinion of quite a number of eminent bacteriologists that diphtheria is a local disease and that the constitutional symptoms are produced by poisonous materials absorbed from the local lesion. It is the object of this paper to inquire into the truth or falsity of this opinion and to study certain other points relating to the etiology of this disease.

The present state of our knowledge derived from bacteriological investigations is as follows:

The most experienced bacteriologists have failed to find in the blood or tissues of animals any microorganisms which could possibly be etiologically related to diphtheria.

Every diphtheritic membrane contains many species of bacteria; these are chiefly those which normally inhabit the mouth, but septic bacteria are also almost always found.

Löffler found a streptococcus in the membrane which on injection into the ear of a rabbit produced a local disease erysipelatous in nature, and on injection into the blood of rabbits produced pyæmia. He also found a streptococcus in scarlatinous diphtheria which spread from the seat of infection through the entire body; this same coccus he found in other diseases which spread from a lesion of the mucous membrane.

To these organisms Löffler himself attaches no etiological significance. He describes, however, another bacterium which he believes is at least one of the causes of true diphtheria. It is a bacillus about the length of the tubercle bacillus, somewhat thicker, and found in the pseudo-membrane at the deepest part of the exudation, but never in the blood or tissues. Cultures on various nutrient media produced a white growth in two days. Guinea-pigs and small fowls died, after subcutaneous inoculation, with a white exudation at the needle wound. If cultures were pencilled into the open trachea of rabbits, fowls, and pigeons, there appeared a widely distributed and characteristic pseudo-membrane. These bacilli were not found in every case of diphtheria; they required a broken surface for inoculation. Young animals were more susceptible to their action than old. They were found in one out of thirty examinations in the mouth of a healthy person. These experiments have been generally accepted as trustworthy by all bacteriologists. Recently d'Espine, of Geneva, "has never failed to find Löffler's bacillus in true diphtheria and has produced the disease by inoculating with pure cultures."

To say the least, this bacillus, which only grows on the surface and is never found in the body, merits careful consideration in studying the etiology of this disease.

Let us now proceed to the study of this question from a clinical standpoint.

At the onset it will be necessary for us to inquire whether our knowledge of the action of bacteria in producing disease is consistent with the local nature of a disease with such severe constitutional symptoms. In answering this inquiry it will only be necessary for us to cite certain facts well established by experimental inoculations.

(*a*) Some bacteria in their growth in organic matter produce poisonous alkaloids or ptomaines.

(*b*) These alkaloids, which in several instances have been isolated, analyzed, and obtained in crystalline form, will, when introduced into the bodies of animals, produce a definite chain of symptoms. One of these, viz., mydaleine, isolated by Brieger from putrefying human cadavers, gives rise to the following symptoms: increased secretion from the nose, mouth, and eyes; injection of the vessels of the ear; rise of temperature and chill; involuntary passage of urine and feces; convulsive movements, in some instances; paralysis of legs; great dyspnœa, and death.

Here we have most profound constitutional symptoms produced by a chemical product of microorganisms and not by the microörganisms themselves, for none was introduced.

It is a waste of time to cite other testimony on this point since not only experimental ptomaine poisoning, but abundant clinical testimony fully establishes the fact that it is not necessary to invoke the aid of microörganisms growing and multiplying in the body of an animal, in explanation of constitutional symptoms as profound and as severe as those of diphtheria. But we must also inquire whether the pathological changes in various parts of the body are inconsistent with the local nature of this disease.

[1] Read before the Cincinnati Academy of Medicine, January 21, 1889.

The lesions on the part of the lungs, such as pneumonia, bronchitis, and atelectasis, may be accounted for by the direct extension of the membrane and by the aspiration of foreign particles and poisonous products into the smaller bronchial tubes. Fatty degenerations of the heart, liver, and kidneys are almost constant results of fever, as shown by Welch in his Cartwright Lectures, 1888. Lymphatic enlargement, congestion, and ecchymoses of the kidneys and other organs are known to result from irritating chemical agents. These pathological changes then occurring in diphtheria are not more readily explained by supposing that a special diphtheritic germ grows and multiplies in the body than they are by adopting the local nature of the disease and attributing them to the action of poisonous products absorbed from the local lesion.

This view is, therefore, not inconsistent with either the symptomatology or pathology of diphtheria.

Let us next inquire whether the microörganisms or the ptomaines are directly responsible for the constitutional symptoms of diphtheria. This is a question which at the present time requires little argument, since the evidence furnished by the clinical history of the disease points conclusively to the fact that they are produced by ptomaines. But not only clinical observations, but also experimental inquiries seem to testify that all microörganisms, whether they grow inside or outside the body, produce constitutional symptoms only through the agency of ptomaines. Welch, in his Cartwright Lectures, 1888, carefully sums up existing testimony, and concludes that fever (which is a typical constitutional symptom), is caused by the action of "pyrogenic" chemical agents which act through the nervous system. These agents are produced by the growth and activity of cells usually vegetable, viz., bacteria, but occasionally animal, viz., biological action of cells of organized tissue.

Certain points established by the ptomaine investigations of Brieger are instructive in this connection. The ptomaines isolated by him from putrefying nitrogenous materials, while not identical, were very similar in their physiological action, differing from each other more in the intensity than in the character of the symptoms produced. These symptoms were also very like the constitutional symptoms of the acute infections. This would indicate that a like cause produced the symptoms in both instances. But a fact that bears more directly on the question under consideration is that one of these alkaloids, mydaleine when introduced into the bodies of animals, produced (as may be seen by reference to its action as given above), symptoms very similar both in character and order of appearance to those of diphtheria. Even the paralysis and heart failure occurring during an attack of diphtheria find an analogue in the paralysis and dyspnœa of mydaleine poisoning; we feel justified, therefore, in attributing these symptoms to the direct action on the nervous system of the poisonous chemical products which are producing the other symptoms.

It may be interesting in this connection to inquire into the cause of the post-diphtheritic paralysis which occurs from two to six weeks after ptomaine absorption from the local lesion has ceased. It does not seem possible that soluble alkaloids, which are so readily excreted, could be followed by symptoms directly traceable to their action so long after their disappearance from the body. The theory recently advanced by Dr. William H. Thomson, that this symptom is due to a post-diphtheritic ptomaine formed by the biological activity of the cellular elements of the body consequent upon the extensive tissue-changes occurring during convalescence is, I think, not tenable, since we have no evidence whatever that a ptomaine having such a peculiar, uniform, continuous, and selective action on the nervous tissue is ever formed, let alone by a process concerning which in this regard we know so little, but, even if such a ptomaine were formed under these conditions, it would follow not only diphtheria, but also typhoid fever, septicæmia, and other prostrating diseases, which have, with rare exceptions, no after-paralysis. We have, therefore, no satisfactory explanation of the post-diphtheritic paralysis in the direct action of ptomaines, but I think we can find a plausible explanation for this symptom in the degenerative peripheral and central nerve lesions so frequently found on careful examination. These changes in the nerve tissue probably have their origin in the action of the same ptomaines which produce paralysis and heart failure during the height of the disease, and these changes thus initiated continue, because of the leucocythemic condition of the blood and general lack of tone of the whole organism, to the production of such structural lesions that paralysis finally results. In a recent paper read before the New York Academy of Medicine, Dr. J. Lewis Smith offers several objections to the theory that diphtheritic paralysis results from anatomical changes, but these objections apply for the most part, if not exclusively, to the paralysis occurring during the attack and not to the post-diphtheritic form. The mutability and early appearance of the paralysis during an attack, argue nothing against this explanation, since at this time this symptom is produced by the direct action of ptomaines.

The fact that "cases do occur in which carefully conducted microscopical examinations reveal an apparently normal state of the nerves supplying the paralyzed part, and of that part of the cerebro-spinal axis from which the nerves arise," may be explained to accord with the above hypothesis as follows.

Post-diphtheritic paralysis is not a dangerous symptom, and the opportunities for investigating its cause by post-mortem examinations are, therefore,

comparatively rare. On the other hand, the paralysis occurring during the attack is a most dangerous symptom, and furnishes ample opportunity for the post-mortem investigation of its cause. For these reasons, then, we would suspect not only that cases would occur in which there was no structural change in the nerve tissue, but that this would be the rule and not the exception. We believe, therefore, that this is the most satisfactory explanation that has been offered for diphtheritic paralysis. During the attack it is caused by the direct action on the nervous system of poisonous products absorbed from the local lesion. After the attack it is caused by degenerative changes in the nerve tissue which were initiated by the action of these same poisons.

From what has been said it is evident that our medical knowedge at the present time points strongly to the conclusion that the constitutional symptoms of diphtheria, including the after-paralysis, are produced either directly or indirectly by ptomaines.

In the logical consideration of our topic, the next question asking solution is: Are these ptomaines formed inside the body or at the seat of the local lesion?

There is scarcely a competent observer at the present day who believes that the local lesion is a mere symptom of a constitutional disease not having any influence other than a local one on its course and duration. All recent writers on this subject agree with Dr. Jacobi in accrediting the local lesion with causing in part the septic symptoms, and greatly increasing the dangers of the disease.

The question then narrows itself down to this: Are the ptomaines formed only at the seat of the local lesions, or are they also formed in the body? In other words, do the microörganisms which cause diphtheria produce their poisons only by their growth in or upon a mucous membrane or surface of some cavity or wound which communicates with the external air, and are the constitutional symptoms always due to the absorption of these poisonous bodies by the bloodvessels and lymphatics of the part affected; or do we have, in addition to this process, these germs living and producing their poison inside the body, away from the external air, and at points remote from the local lesion? Let us see what light can be thrown upon this question by the clinical history of this disease.

In tonsillar diphtheria we have little or no fever, very slight glandular enlargement, and almost no septic or nervous symptoms. In short, the constitutional symptoms are very slight, and our attention is called to the child's throat by the local engorgement and pain, and the diagnosis is made by the characteristic local lesion. The explanation for this is, that the tonsillar tissue being so poorly supplied with lymphatics, does not furnish the means for the ready absorption of the poisonous materials formed on its surface, and, therefore, the constitutional symptoms which are produced by these poisons are present only in a very slight degree. This in itself is sufficient proof that tonsillar diphtheria is a purely local disease. For, if the tonsillar disease were but the local expression of a constitutional malady, or if it were the initial lesion of a constitutional disease, then the symptoms would not be dependent, as we know them to be, on the lymphatic distribution of the part affected not only for their intensity, but for their very existence throughout the course of the disease.

The fact that a certain amount of absorption does take place in tonsillar diphtheria, as is shown by the slight constitutional symptoms and lymphatic enlargement, clearly proves that the diphtheritic germs, if they could live within the body, would find ample opportunity for entrance, at least in small numbers, into the blood and tissues of the animal.

The fact, which is amply proven by clinical testimony, that the ptomaines of diphtheria are very virulent, would strongly indicate, since these are the weapons with which the germs fight, that the lymph-cells and other elements of the body would wage a very unequal contest with these organisms should they find an entrance into the body.

The fact apparently proven by Watson Cheyne's investigations, that the dose of the virus in very susceptible animals has nothing to do with the course or termination of the disease, since some children are certainly very susceptible to diphtheria, would indicate, in connection with the two facts just recited and the clinical history of the disease, that the diphtheritic germs cannot live in the body of an animal. For, if this were not the case, the germ's facility of entering the body, its rapid multiplication, and the virulence of its ptomaines, would enable it to produce just as severe and fatal disease when the local lesion is in the tonsil as when it is in the nasal cavity. Probably the only influence which the size of the dose of the virus absorbed from these surfaces could have on the course of the disease, would be in lengthening or shortening the stage of incubation.

For these reasons, then, we conclude not only that tonsillar diphtheria is a purely local disease, but that the diphtheritic germ is strictly an external parasite.

Nasal diphtheria is a dangerous and dreaded disease, which gives us a clinical picture in which it is hard to trace any resemblance to the tonsillar disease which we have just described. Its characteristics are: high fever, great glandular enlargement of the deep cervical lymphatics, profound nervous symptoms; in fact, the constitutional symptoms so overshadow the local symptoms, that the latter, from a prognostic standpoint, are scarcely to be regarded at all, and are only of interest to us from a diagnostic standpoint, unless the local lesion is in some manner responsible for the constitutional symptoms,

then they would have an immense therapeutic and prognostic import to us, and such, in fact, is the case.

Dr. Jacobi says that on the thorough irrigation and disinfection of the nasal cavities hangs every life in nasal diphtheria, and just in proportion to the thoroughness and frequency of the washing of the local lesions, the fever, the septic symptoms, and the cervical lymphangitis are abated. The explanation for this is apparent to the merest novice in medicine, viz., the parts are so cleansed of the poisonous materials, which, on absorption, are causing the constitutional symptoms, that only the minimum amount of this material is left behind to be taken up by the thirsty lymphatics and bloodvessels of this very vascular part, probably of all surfaces, in or on the body, the best adapted for absorption.

If diphtheria is ever a constitutional malady, it is so in just this form we are describing, and yet, we have in this extract from its clinical history the most direct testimony that it is purely local.

That the profound constitutional symptoms are not produced by diphtheritic germs, growing and multiplying in the blood or tissues of the child, is amply proven by the fact that these symptoms are abated by treating the local lesion. For, if the diphtheritic germs found entrance into the body, and could grow and multiply there to the extent of producing the deep septic symptoms of that disease, as well might we hope to influence the constitutional symptoms of syphilis by washing the chancre, as to hope to influence the symptoms of diphtheria by washing the gateway by which these germs entered. Our knowledge of the physiological properties of bacteria plainly teaches us that these germs would multiply so rapidly in the body, if the conditions were favorable, and they certainly would be if such profound symptoms resulted from their action there, that the comparatively small portion absorbed from the local lesion during the course of the disease would have no appreciable effect on the symptoms, and the washing away of these germs, and the products of their growth could not in any way influence the course of the disease. For these reasons, then, diphtheria is a purely local disease.

That the deep glandular enlargement is not due to the migration of diphtheritic germs along the lymphatics is, in like manner, amply proven by the fact, that this enlargement begins to disappear with the thorough irrigation and disinfection of the nasal mucous membrane upon which the lymphatics communicating with the enlarged glands open. If the germs migrated to the lymphatic glands and there produced irritation by their development, then the glands themselves would be the site of an active diphtheritic process, and the disease would continue whether the source of the contagion were removed or not. This, as we have just seen, is not the case, and, therefore, the lymphatic enlargement cannot be thus explained.

On the other hand, if the glandular enlargement be due to irritation of chemical products taken up by the lymphatics from the seat of the disease, then this enlargement would abate when the surface of absorption was kept clean and free from the poisonous materials which was causing the irritation, and this, as we have before noted, is the case. The fact that this explanation of the glandular enlargement is supported by clinical observations is very strong testimony in proof of the strictly local origin of diphtheria; for, if the diphtheritic germs ever thrive in any part at all removed from the local lesion and within the tissue of the animal, it must be in the neighboring lymphatic glands. The occasional long-continued or permanent enlargement of the lymphatics following diphtheria can be readily explained by allowing that diphtheria, like other local diseases or injuries, may awaken in the glands a latent tuberculosis, or syphilis, which remains as an active disease after the diphtheria has disappeared. This lymphatic disease would, in turn, cause a chronic irritation or congestion of the mucous membrane of the nose and throat, which would, by reason of the fact that it furnishes a favorable soil, predispose to a second attack. This, it seems, is a much better explanation than to suppose, as Dr. Jacobi does, that the enlarged glands contain the latent diphtheritic germs which are called to the surface and into activity by some local irritation of the throat or nose, especially since this explanation, as we have shown above, seems inconsistent with clinical facts. Again, if second and third attacks of diphtheria are to be explained by the lymphatic glands holding the latent germs, then these germs would be called to the surface at a point where the lymphatic distribution communicating with the diseased glands was freest, viz., the nasal mucous membrane, and the vast majority of second and third attacks would, therefore, be primarily nasal; but this, every clinictian knows, is not the case.

If, on the other hand, the explanation be sought in some chronic irritation of the mucous membrane of the nose and throat, resulting from such causes as lymphatic tuberculosis and syphilis, which upon slight provocation would furnish a predisposing factor in a favorable soil for the growth of the germ, then the disease would first appear with greatest frequency, other things being equal; at the point in the throat most exposed to the diphtheritic poison, viz., on the tonsils and pharynx; and further than this, one attack of diphtheria would predispose to other attacks not in most persons, but only in those in whom there was a previous constitutional blight or latent disease of the lymphatics, by reason of which the mucous membrane of the throat and nose

did not return to a normal condition after the subsidence of the diphtheritic attack. The number of the second and third attacks is so small in proportion to the number of first attacks that they can readily be accounted for in this way. Further than this, it is my belief that one attack of diphtheria not only does not predispose to other attacks, except in the way mentioned, but, on the other hand, gives temporary immunity in proportion to the severity of its constitutional symptoms. The more severe the attack the longer the period of immunity. The fact that second and third attacks are usually mild and, as a rule, follow mild first attacks, lends support to this view.

Immunity is the most obscure chapter relating to the infectious diseases. We know that there is a natural immunity and an acquired immunity against *self-limited* infectious diseases. Of the latter, we know that it results from a previous attack of these diseases. It occurs to us that the causes which give to these diseases the characteristic of self-limitation and check their progress must be the same which give the after-immunity. If this be true, diseases such as malaria which do not confer immunity are not self-limited. Why is the convalescent diphtheritic patient not always reinfected by his own virus? Why does he not contract the disease from his brother and sister who are suffering from it during his convalescence? Why does not the membrane return to the tonsils after an excursion into the pharynx, larynx, or nasal cavity? These questions, I think, can best be answered by supposing that the disease has been terminated by the acquisition of a temporary immunity on the part of the patient, which continues for a longer or shorter time protecting him against future attacks. The occasional second and third attacks occurring during convalescence, even if they be due to reinfection, are but exceptions, which show the value of this pro tection.

The limits of this paper will not permit the further consideration of our topic from a clinical standpoint, reference only can be made to the fact that when diphtheria attacks the larynx, which is almost devoid of lymphatics, we have an example of a purely local disease without constitutional symptoms and when it attacks the trachea, which has not a very free lymphatic distribution and is filled with mucous glands, we have a severe local disease with mild constitutional symptoms. From clinical evidence we arrive at the conclusion that diphtheria is a local parasitic disease in which the constitutional symptoms are caused solely by the absorption of poisonous materials from the diseased surface, or, as Watson Cheyne puts it, by septic intoxication. The degree of this septic intoxication will depend on the anatomical structure of the part on which the germs grow, in reference to its hindering or promoting absorption.

The next question which we wish to consider is, What evidence have we, other than clinical, that the cause of diphtheria is not an *internal* parasite? Evidence purely negative in character may be obtained by an examination of the blood and tissues of animals sick or dead from this disease.

The failure of the most renowned bacteriologists to find the specific germ in the body is negative testimony of considerable value in the light of our present knowledge, although the specific germ may not as yet have been positively identified. The failure to find in the body the characteristic membrane which is the product of the growth of this germ and which we, from a clinical standpoint, have come to recognize as the *sine qua non* of its existence, is also valuable evidence on this question. If the diphtheritic germ were an internal parasite, we would expect to find in post-mortem records abundant evidence of this fact in the frequent occurrence of the membrane. Do we find this to be the case? Not by any means; but, on the other hand, in marked contrast are the findings at rare intervals, in ulcerative endocarditis complicating diphtheria, of a process resembling that of diphtheria. When these facts are considered in connection with the differing opinions of pathologists as to the exact characteristics of the membrane, it renders it far from certain that the diphtheritic growth has ever been found in the body. Inoculation experiments with matter from the diphtheritic membrane furnish abundant and apparently conclusive testimony on this question. It is quite evident that, if the germ is an internal parasite, the sure and rapid method of producing this disease would be by subcutaneous or submucous inoculation. But with the multitude of inoculation experiments that have been performed, we have no evidence whatever that the disease can ever be produced in this way; at times a diphtheritic process would be set up in the needle wound, but this undoubtedly came from surface inoculation. On the other hand, if the broken surface of a mucous membrane or wound of the skin were inoculated the disease almost always resulted. From these experiments alone I think we are warranted in the conclusion that the diphtheritic germ is not an internal parasite. It must, therefore, be strictly an external parasite incapable of living in the body of a living animal.

Let us next consider the question, Is the diphtheritic germ strictly aërobic? In other words, does it require free oxygen for its growth and development. A. d'Espine and C. Picot stated in 1877, that the membrane could only be developed in contact with the atmospheric air. Eustace Smith says: "The more usual seats of the false membrane are the tonsils, uvula, soft palate, back of the pharynx, nasal passages, larynx, and trachea; less commonly it is found on the conjunctiva, at the borders of the anus, in the vagina of girls, upon the glans penis,

wounds of the skin, and the external auditory meatus," and does not mention the stomach and intestines. It is evident from this, that the mucous membranes removed from the external air are comparatively exempt from the disease. Jacobi says: "The upper part of the œsophagus over a surface of one-half to one inch is often covered in cases of the extensive pharyngeal and laryngeal diphtheria. The upper portion of the deposit is very much like the adjoining pharyngeal membrane, but the lower part is thinned out into a mere film."

This is a good example of the further extension of the membrane being checked by the sparseness of atmospheric air. Food and water passing over the diseased surfaces in the throat furnish better facilities for the transmission of the germs into the œsophagus and stomach, than is furnished by the air for their transmission into the larynx and trachea. Yet, the latter is one of the most common, and the former a rare, site of this process. The presence of acid may account, in part, for this comparative immunity of the stomach, but, it cannot explain the rarity of the disease in the lower part of the œsophagus and the large and small intestines, since these latter might be affected by the upward extension of the membrane from the anus.

While the infrequency of the membrane on those portions of the mucous membrane of the digestive tract removed from the external air would indicate that the germ is almost aërobic; yet, its occasional appearance in the stomach and intestines would be evidence that it is not strictly so, since free oxygen is not one of the gases of the intestinal canal. The rarity with which the diphtheritic exudation is found in the stomach and intestines, would indicate that some pathological change in these parts is necessary to furnish the conditions requisite for the growth of the germs.

These conditions, we conclude from knowledge of its habitat, must be such as will furnish it with oxygen either in a free state, or in such unstable combination that it can be utilized by the germ in its growth. Such an unstable compound we have in the oxyhæmoglobin[1] of the blood. A congested and eroded mucous membrane would, therefore, be the pathological condition which would bring the germ in contact with this body from which it would derive its oxygen.

The fact that germs, such as anthrax, which are classed as strictly aërobic, can live and multiply in the body, deriving their oxygen from this source, is sufficient evidence that this explanation is not far fetched. We conclude, therefore, that the diphtheritic germ is practically, if not strictly, aërobic.

We must not fail to note that diphtheria may be complicated by the entrance into the body of septic germs taken up by lymphatics and bloodvessels from the diseased surface. In this manner we may have a true septicæmia developed with the germs causing the disease growing and multiplying in all parts of the body. This may furnish us with an explanation of the so-called malignant form of this disease and with the ulcerative endocarditis which occasionally occurs. A complication, such as this, might so overshadow the original disease, that the local treatment of the diphtheritic surface would have no appreciable effect on the constitutional symptoms, for the septic germs would find in the cellular elements of the body, weakened by the action of the diphtheritic poison, ready victims. We may also have less dangerous complications, such as abscesses about the lymphatics of the neck. These may be caused by the entrance of some of the germs known as the pus-formers, or by the awakening into activity of certain latent germs capable of producing the same condition. While these complications, which are not of frequent occurrence, may be constitutional, the orignal disease remains purely local.

In conclusion, we may summarize the following points from the arguments presented in the paper:

1. Diphtheria is a purely local disease.
2. It is caused by an external parasite.
3. This parasite is practically, if not strictly, aërobic.
4. The constitutional symptoms are due to the absorption of poisonous materials, viz., ptomaines, from the local lesion.
5. The changes occurring in the blood and tissues, including the late nerve lesions, are caused by direct or indirect action of ptomaines.
6. This disease has no latent stages, and second and third attacks are due to reinfection.
7. One attack, as a rule, gives at least temporary immunity.
8. After the limited period of immunity has expired, the previous attack may act as a predisposing cause to other attacks, if it has left the mucous membrane of the throat in an irritated and inflamed condition. This is more likely to occur in scrofulous subjects.
9. Complications may occur from the entrance into the body of septic germs.

If these nine propositions embrace the true points in the etiology of diphtheria, then they are of vital importance to us in the treatment of this disease.

Upon these propositions the following rules of treatment may be formulated:

1. Dissolve away the membrane, if possible, and irrigate thoroughly and frequently with an antiseptic solution the local lesion, for the double purpose of washing away the poisonous alkaloids and retarding the growth of the parasites.
2. In diphtheria of wounds, and in other parts

[1] That the germ might receive its oxygen from this source was suggested to me by Dr. W. S. Christopher.

where it is practicable, the thorough irrigation should be followed by a dressing which would exclude the atmospheric air. This on account of the aërobic nature of the germ.

3. We should try to relieve the system of the poisonous alkaloids by mild catharsis—free diuresis and diaphoresis, with remedies which do not have a depressing action on the heart.

4. We should seek to counteract the depressing effects of this poison on the heart and other tissues by abundant stimulation.

5. We should also seek to counteract its deteriorating influence on the blood by the free exhibition of the great blood restorer, iron.

6. We should render the air of the sick-room as nearly aseptic as possible, to prevent the entrance of adventitious septic germs.

7. Chronic glandular enlargement, or other local disease in or about the throat, left as the sequel of diphtheria, should be given the most careful consideration, and, if possible, thoroughly cured before dismissal. If this cannot be done, the patient should be warned against future exposure to the diphtheritic poison.

8. The patient should not be entirely dimissed from observation for two months after the attack, and during this time with tonics and judicious feeding we should assist nature in restoring the blood and tissues to their normal condition, that they may resist the degenerative nerve changes which cause the after-paralysis

9. A serious exacerbation of the symptoms in any form of ulceration or catarrh of the stomach or intestines occurring in a patient exposed to the diphtheritic poison should lead us to suspect diphtheria of these parts, and we should treat the case accordingly.

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SARCOMA OF THE TONSIL.[1]

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Primary sarcoma of the tonsil—so far as cases have been put on record—appears to be a rare disease, and the meagre literature on the subject, as given in the *Index Medicus*, verifies this statement. This especially applies to past observations. Current literature offers a far greater proportion of cases, the years 1886 and 1887 being particularly rich. This can probably be explained by the greater zeal manifested throughout the world in the study of laryngology; in the increased number of observers now at work; together with the exact methods of study now in vogue.

[1] Paper read before the American Laryngological Society, Washington, September, 1888.

The object of this paper is not so much to give a complete bibliography of the subject (although I have appended to the history of my own case an epitome of cases recorded so far as they were accessible to me), but with the hope of bringing out in discussion the comparative frequency of sarcoma of the tonsil, as shown in the wide experiences of members of this Society.

The history of my own case is as follows:

Mary A. W., mulatto, aged forty-five, native of New Jersey, married, no children, first came under my care in May, 1886. The short family history is as follows: her father died of paralysis at seventy years of age; her mother is still living and in good health, aged about seventy; a maternal aunt died at an advanced age of a tumor of the breast, said to be cancerous; an older sister of the subject of these notes also died of a tumor of the breast of a malignant character, at the age of fifty; the other children are healthy, and are still living; a niece and nephew had died of consumption of the lungs one or two years before she came under my observation. The history of her father's family was good.

Her general health had been moderately good, but her menstruation had always been very irregular. She suffered from a menstrual flow which often lasted for several months, and after ceasing would not again appear for as long as six months. This state of affairs continued during her married life. No history of abortions or miscarriages could be made out.

On the 15th of May, 1886, the patient presented herself for treatment, complaining of a soreness on the right side of her throat, which rendered deglutition somewhat painful. She stated that this soreness had only been present for a few days, and she thought was not different from what she had often had before. Her general condition was good; flesh and strength maintained perfectly. Examination revealed on the *right* side a redness with but little swelling of the tonsil, accompanied by the slightest flushing of the anterior palatine fold in its lower half. The tonsil gave all the appearances of a tonsillitis of a mild type. Appropriate treatment was advised, and, with the injunction to let me see her again the following day if not improved, she was dismissed.

At least three weeks intervened between the first and second visits. At the second visit the previous symptoms and appearances were accentuated. The tonsil was a trifle larger, and showed a cleavage through its substance irregular in direction. A probe pressed into this fissure for about one-third inch with a little force could separate the two lips for a considerable distance. In this fissure, and hanging from it, was a grayish, pultaceous, irregular mass of tissue, which was quite movable, but adherent to the bottom of the fissure; this mass gave off a fetid odor, and led me to believe that a small abscess in the tonsil had become gangrenous and the outer wall had sloughed away, causing this appearance and retaining some of the decomposed contents. There was nothing in the appearance in color or form of the tonsil to warrant an opinion of

other than a simple inflammatory condition. The cleavage was peculiar, it is true, and yet *could* be explained as above stated. The sloughing fissure was washed out and a solution of carbolic acid, iodine, and glycerine applied. In a few days the fissure was perfectly clean and the odor gone; the redness had abated considerably. The adjacent tissues appeared healthy. The general health of the patient had not suffered nor had she lost flesh. There was no lymphatic glandular involvement whatever present, neither was there any until very late in the progress of the case.

After several weeks absence the patient again reported for treatment, having, during the interval, enjoyed freedom from any unpleasant symptoms until a few days previous, when some uneasiness and pain in swallowing occurred. The local appearances were strikingly changed, the tonsil remained comparatively small and with little appreciable change in color (indeed the tonsil itself never increased much in size, but remained throughout the disease in about the same condition), but the anterior palatine fold had become infiltrated, thickened, shiny, and grayish-red; having a zone of deeper redness, as a limiting margin, shading off quickly into sound tissue.

This involvement embraced all the ascending portion of the anterior palatine fold; the appearance of grayish-redness resembled that of a gumma in a striking degree. Upon pressure, the swelling felt somewhat like that of an erysipelatous inflammation of the face—possibly less brawny. This appearance remained for a few days with a slow involvement of the half arch and palate, when suddenly a small whitish spot appeared in about the centre of this right half arch, which rapidly increased in extent and soon showed a loss of tissue in the fold—very material and threatening complete destruction of it.

There appeared to be considerable œdema bounding the destructive process: the color was darkish red. The destruction of tissue embraced a large portion of the fold, and when it had ceased the appearance of the fold and arch was ragged, thickened, and red; the uvula was well over to the opposite side. The process of involvement never completely destroyed the uvula, but for a long time did not appear to cross the median line, and at no time was there any involvement of the opposite side, although late in the disease the left side was greatly encroached upon by new developments.

A stage of quiescence intervened with a general improvement of all the symptoms, and a faint hope of arrest. Her strength and spirits were still unimpaired.

After this stage of quiescence had continued for some weeks, upon rhinoscopic and laryngoscopic examination an irregular mass of red, velvety tissue was noticed behind the posterior palatine fold. Its long diameter was vertical, and extended from a line a little below the lower line of the tonsil, and continued well up behind the palate to the margin of the Eustachian tube. This mass grew rapidly at first and pushed out prolongations laterally which were about one-half inch in thickness and appeared to spread out *over* the posterior pharyngeal wall and to be *movable* upon it, so that a probe could be passed underneath its free edge for some little distance until it came in contact with its hardened base springing from the lateral wall. This mass continued to push out and spread over until that half of the pharynx was materially encroached upon. Again there was a destructive process set up and sloughing, followed by relief of encroachment and a stage of abeyance of all activities.

This stage continued for an interval, followed by re-development in this region as well as in that of the palate. From the free and ragged edge (which had made efforts for a time to heal) there sprung out a soft, velvety fringe, red and glistening, which was accompanied by increased infiltration of the palate followed by sloughing. This process was repeated again and again during her illness until the border of the hard palate was reached on the right side where the destructive changes ceased, and toward the end of the disease the edge of the hard palate appeared to act as a breakwater to the further progress of the disease in that direction.

After the lateral and posterior wall had been subjected to repeated involvements and the space fully occupied by the growth in the region before mentioned, the *lower* portion of the mass began to interfere with the base of the tongue and somewhat with the play of the epiglottis, rendering the swallowing of fluids somewhat hazardous. This condition was, however, for the most part confined to the latter end of the disease, and for many months respiration and deglutition were accomplished with comparative comfort.

After some eight months the upper end of the growth began to make respiration through the right nostril difficult; and toward the end it became impossible. After about six or seven months the base and sides of the tongue showed implication. The tongue appeared to become involved through the medium of the lateral ligament and from there extended over the right side of the tongue, and then downward toward the base.

The disease also crept along from the angle of the jaws to the gums; from there to the mucous membrane of the cheek, and gave rise to some swelling of the cheek, externally, and inability to close the mouth. As soon as the tongue, gum, and cheek became involved the sub-maxillary gland began to swell and attained the size of a small walnut; the lymphatic glands which, appeared to be so long in showing involvement, at about eight months began to become indurated in the side of the neck and were slightly tender; they never increased much in size.

For some weeks prior to her death deglutition became very difficult and painful; respiration was impeded so much that tracheotomy seemed at times almost imperative. As soon as deglutition began to be *very* difficult—at about nine or ten months—the patient rapidly began to fail in strength and lose flesh; the emaciation was accelerated toward the end, as difficult respiration and pain were added to lack of sustenance caused by difficult deglutition.

A day before her death an attempt was made by

her relatives, against my advice, to remove her to her former home, and although warned that she would certainly die in the attempt, they carried out their wishes, and the patient died suddenly in the carriage on removal from the train.

Much to my regret, no *post-mortem* was obtainable, being out of jurisdiction.

The treatment was non-surgical, and to many it will doubtless appear strange that some active surgical measures were not instituted.

There were several factors present which prevented a prompt decision for an operation:

1. The rarity of the case and want of a clear diagnosis.

2. The want of distinctive features while the tonsil alone was involved, having all the appearance of a tonsillar inflammation, and the absence of the patient during the critical period of the few weeks when surgical interference would have been most effective.

3. A necessarily unsatisfactory report from the microscopist to whom I gave a too small portion of the growth for examination.[1]

After the involvement of the lateral and posterior wall, several consultations were held, and the opinions being adverse to a radical operation, it was abandoned.

The medical treatment consisted of the administration of Donovan's solution, beginning with the usual dose, and gradually increasing until fourteen drops were taken, three times a day. It was remarkable how large a dose could be taken for so many months without the slightest gastric derangement or constitutional injury.

The local treatment consisted of galvano-cautery, lactic acid, and, finally, for many months the application every few days of a solution of crystallized iodine and crystallized carbolic acid 1 to 4. This appeared to control or *retard* the development better than any other remedy used, and destroyed the fetor most effectually during the stages of sloughing.

The duration of this case was one year.

In an analysis[2] of 10,100 cases of tumors occurring in four of the London hospitals, extending over periods varying from nine to seventeen years, only nine cases of *primary* tumors of the tonsil appear, and of these only *one case* of sarcoma is recorded.

Mr. Butlin, in his lectures on tumors, records only nine cases of sarcoma of the tonsil. In the *Transactions of the Pathological Society of London*, 1882, p. 331, Samuel West, M.B., narrates an interesting case of sarcoma of the *right* tonsil. The subject was a woman aged seventy-four years. There was marked glandular involvement. The duration was five and a half months.

Mr. Lennox Browne,[1] of London, at a meeting of the Medical Society of London, March, 1887, showed a patient suffering from lympho-sarcoma of the *left* tonsil, extending down the pharynx and involving the larynx.

At the Academy of Medicine,[2] in Ireland (Surgical Section), April, 1887, Mr. Henry Gray Croly read a paper on primary sarcoma of the tonsil. He detailed the history of two very interesting cases. One was that of a lad aged seventeen years, admitted into the City of Dublin Hospital, April, 1886. The history of the beginning of this attack is remarkably like that of my own case. It began like an ordinary tonsillitis in the left tonsil (also involving the soft palate),

"and so much did the swelling resemble tonsillar abscess that an exploratory incision was made by the medical gentleman who first saw the case. No pus escaped. Glandular infiltration in the digastric space showed itself. All the usual symptoms were present—painful deglutition, dyspnœa, etc. An operation was performed. A rapid reappearance necessitated another operation. A cauterization followed this second operation. The disease returned very rapidly and the lad soon died. The duration of the disease was six months."

The second case of Mr. Croly's occurred in a man over fifty years of age. The growth was confined to the tonsil (left or right not stated), and, like the other case, so much resembled tonsillar abscess that an incision was made into the tumor. Mr. Croly declined to operate, owing to glandular infiltration. The patient subsequently died from repeated hemorrhages. Duration of disease not stated.

Prof. Weinlechner[3] reports a case of sarcoma of the left tonsil in a man fifty years of age. Infiltration of the glands at angle of the jaw and subsequent involvement of the side of the pharynx; hemorrhages requiring ligature of the common carotid. The claim is made of "arrest and disappearance of the growths" from injections of a solution of ether and iodoform 1 to 10. No microscopic examination having been made, there remains an element of doubt as to the true nature of the growth.

Zeigmondy's case[4] was of the left tonsil. Operation by the galvano-cautery. Microscopical examination showed it to be a spindle-celled sarcoma.

Dr. M. H. Richardson[5] reports a case of round-celled sarcoma of the left tonsil in a woman. Externally, induration; internally, the tonsil was pushed with the pharynx to the median line. April, 1887, the tumor was successfully removed by external incision. The upper portion of the growth extended

[1] Later investigation proved it a round-celled sarcoma.

[2] Sex and Tumor Formations. By W. R. Williams, F.R.C.S. Eng. London Lancet, May, 1884, p. 934.

[1] British Medical Journal, April, 1887, p. 724.

[2] British Medical Journal, June, 1887.

[3] Allgemeine Wiener medizinische Zeitung, October, 1882.

[4] Aerztl. Ber. d. k. k. allg. Krankenh. zu Wien, 1878, pp. 151–153.

[5] Boston Med. and Surg. Journal, and The International Journal of Surgery and Antiseptics, July, 1888.

to the base of the skull and was difficult of removal. The patient made a rapid recovery. Seven months after the operation there had been no recurrence of the growth. Dr. W. M. Gray,[1] Microscopist to the Army Medical Museum, Washington, D. C., has some beautiful microscopic sections of a sarcoma of the tonsil occurring in a child. The sarcoma is alveolar.

This completes the list of cases of primary sarcoma of the tonsils accessible to me, and makes in all nineteen cases,[2] including my own.

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THE RESULTS IN SEVEN OPERATIONS FOR THE RESTORATION OF THE LACERATED CERVIX UTERI.[3]

BY L. D. BROSE, M.D., PH.D.,
OF EVANSVILLE, INDIANA.

IT is my intention, through the relation of these cases, to put on record the outcome of my personal experience with the Emmet operation of trachelorrhaphy, performed on what I considered proper subjects. I say proper subjects, for the reason that I do not consider it justifiable to advise or perform this operation upon every woman who chances to have her cervix uteri lacerated to more than an ordinary degree.

CASE I.—Mrs. R., æt. twenty-eight, consulted me in May, 1885, complaining of pain in the stomach, aching and tired feeling in the legs, irregular menstruation, and a gradual loss of flesh and strength. She is anæmic and suffers from irregular febrile attacks. For these symptoms a number of physicians have given her treatment for dyspepsia and malaria. She is the mother of three children, the youngest two and a half years of age, and dates her trouble from the second confinement. All of her labors have been very rapid, while the children have been of an average size. She states that the same midwife attended her in all her confinements, and that she would rupture the bag of waters immediately after coming to the bedside, labor terminating with three or four pains thereafter.

Convalescence from her puerperal periods is always slow. When she became pregnant with her third child, she picked up in flesh and apparently regained her health, only to suffer relapse after confinement.

Physical exploration.—Perineum complete. Vagina relaxed. The tissues forming the cervix uteri were greatly engorged and hypertrophied with eversion and erosion of the mucous lining of the cervical canal. There was a bilateral laceration through the circular fibres of the external os, extending higher on the left side. The position of the uterus was that of retroversion, with a sound measurement of minus three inches.

Treatment.—A Smith pessary corrected the uterine displacement, and local with constitutional treatment brought about a general improvement of health.

During the following July she became pregnant, but aborted at the end of four weeks with severe flooding. From this time on she suffered repeatedly from menorrhagia and metrorrhagia, and at times complained greatly of a bloody taste in her mouth with spitting of blood. The blunt curette was repeatedly applied, followed by applications of tincture of iodine and even fuming nitric acid. Some relief from flooding followed, but my patient became more and more anæmic and continued to suffer with irregular febrile attacks. During December of the same year she again became pregnant, with marked improvement of her general health, but abortion again followed in about four weeks. The flooding at this time was very serious and required the use of a vaginal tampon for its arrest. It returned in ten days, when after the insertion of a sponge tent into the cervical canal, a digital exploration of the uterine cavity was made, followed by the use of Sims's sharp curette and applications of Churchill's tincture of iodine. The flooding remained checked after this treatment until the next menstrual period, when she again suffered from menorrhagia.

Consent was now given for the operation of trachelorrhaphy and this was accordingly made with the use of five silver sutures. On the ninth day the wire was removed, perfect union having occurred, and my patient steadily improved and was finally restored to her usual health. Menstruation became regular and normal and the dyspeptic symptoms wholly disappeared.

On October 19, 1888, I delivered her of a strong, healthy eight pound child, after a labor of four hours duration, most of the time being taken up by dilatation of the os, and was farther gratified to have her make a rapid recovery from the puerperal period. She has discarded the pessary, and since her health continues good I have not had an opportunity of examining the cervix, to determine as to its relaceration.

CASE II.—Mrs. W., æt. twenty-five, a New England lady, consulted me in April 1886, giving a history of her first confinement eighteen months ago, since which time she has been in poor health and unable to perform her household duties. The labor was very tedious and painful owing to the child being of large size. She is troubled with whites and suffers a great deal with backache and pains in the ovarian regions, aggravated with each monthly sickness.

Physical exploration.—The uterus is in a state of subinvolution, is slightly prolapsed and retroflexed. The cervix is greatly hypertrophied, bilaterally lacerated, with eversion and erosion of its mucous lining.

Treatment.—Insertion of a Smith pessary with vaginal douches and local applications of tincture of iodine. The improvement was marked, but owing to the subinvolution and partial prolapse an operation was performed in the following May, to repair the lacerations. Seven silver sutures were employed,

[1] Since published in the American Journal of the Medical Sciences, February, 1889.

[2] Possibly twenty, if the following be a case of *primary* sarcoma, which I am unable to verify. Sarkom der beiden Tonsillen. Jahrs. ü. d. Chir. Atch. d. Spits. zu Basel (1883) 1884, pp. 29–31.

[3] Read before the Vanderburgh County Medical Society at Evansville, Ind.

after the removal of much cicatricial tissue, union becoming perfect by the ninth day, at which time all sutures were removed. Recovery of health was uninterrupted and with the support of a pessary she was soon able to perform her household duties.

September, 1888, I delivered her of a male infant weighing eight and a half pounds. The labor was very protracted, requiring some sixteen hours for complete dilatation of the os. It was necessary for her to leave her bed on the ninth day, owing to her first-born having a severe attack of pneumonia, and then as a further bar to convalescence from the puerperal state, the newly born infant was attacked with severe bronchitis. The duties attending upon the sickness of these children required her to be upon her feet most of the time, occasioning by reason of this some uterine prolapse, but this was corrected by a Hodge pessary, and the patient made a good recovery from the conditions following confinement.

CASE III.—Mrs. B., æt. twenty-six, a strong, healthy-looking country woman, consulted me in March, 1886, for pelvic pains, headache and backache, and an irritable bladder. She is the mother of one child some two years old, and has had a second confinement, the child, however, being born dead through the presentation being of the breech.

Physical examination.—Uterus measures minus three inches, is lower than normal, and bilaterally lacerated. The cervix is greatly hypertrophied and its mucous lining abraded. A Smith pessary was inserted and local with general treatment instituted, with benefit to the patient. May 19th, of the same year the edges of the laceration were resected freely and brought together by means of six silver sutures.

An uninterrupted recovery followed. Domestic troubles caused at this time a separation from her husband and she has since made her home with her parents.

CASE IV.—Mrs. H., a German lady, æt. thirty-four years, presented herself for treatment in October, 1875. She is the mother of three girls, the youngest four years old, and since this last confinement has never regained her usual health. Her subjective symptoms are severe headaches, the pain being chiefly on the top of the head, pain in the stomach with heaviness, and dragging pains in the small of the back. Besides these symptoms she complains of leucorrhœa and acknowledges to being a very nervous person. Physical examination showed the uterus to be enlarged and heavy with a severe bilateral laceration of the cervix. The mucous membrane of the cervical canal is infiltrated and bleeds readily upon contact with the sound. The usual local treatment was instituted but without positive improvement. The headaches returned with increasing severity, associated with attacks of epistaxis, the abstraction of blood in this way affording temporary relief. She became more and more anæmic, daily congestions of the brain occurred, and lastly mental derangement followed. Irregular febrile attacks were now suffered from. The mental condition growing rapidly worse, it became necessary to be exceedingly watchful to prevent her from self-destruction. Her husband told me she frequently urged him to take his life with her, so that they might together enter the other world. These various symptoms and conditions were persistently treated with improvement of the mental condition but not total restoration. Finally consent was given to repair the laceration of the cervix uteri, and in doing this operation especial care was taken to remove as far as practicable cicatricial tissue. Seven silver sutures were placed in position and allowed to remain nine days. Good union occurred and from this onward a gradual improvement in all the symptoms followed.

Owing to Mrs. H.'s removal to Omaha some five months after the operation, I was not permitted to follow the case to its conclusion, but I have since learned through relatives that she is living happily with her family, wholly restored in mind and body.

CASE V.—Mrs. M., a strong, well-developed German woman of thirty years, and the mother of two children, the youngest two years of age, consulted me for ill-health dating from her last confinement. The labor was a very protracted and painful one, and caused much mental uneasiness, owing to her living in a portion of Kansas where she was obliged to send a long distance for a physician, and labor terminating ere his arrival at the bedside. At the time of consulting me in January, 1888, she complained of congestive headaches, dysmenorrhœa, leucorrhœa, and painful digestion with irregular pelvic and back pains.

Physical examination.—Perineum complete. Position of the uterus normal. The cervix was hypertrophied, engorged, and badly lacerated on both sides, giving rise to eversion of its mucous lining. After preparatory treatment the laceration was repaired March 19th, the extent of tissue removed, necessary to secure proper coaptation, being so great as to include all the mucous membrane covering the two lips of the external os uteri. Strands of silk were inserted to reëstablish the cervical canal and the wound properly closed with seven silver sutures. On the eight and ninth days the sutures were removed, at which time union while not complete was good, and rapidly became perfect. The benefits following this operation have exceeded the expectations of the patient and likewise her doctor, headaches, dysmenorrhœa, and accompanying unpleasant symptoms wholly disappearing.

The two following cases included in this paper occured in the practice of a brother physician, whom I assisted at the time of his performing the several operations.

CASE VI.—Mrs. G., a lady under twenty-six years, and the mother of one child, had a partial laceration of the perineum and a bilateral laceration of the cervix uteri. Both lacerations were repaired February 22, 1886, the edges of the cervix being brought together by catgut and the perineum closed with shotted silver sutures. Dr. —, the physician in attendance, personally drew off the urine for several days, and on the fourth day instructed the husband in the use of an English flexible catheter. Occasion arising for its use the husband attempted to pass the instrument but failed, causing his wife some pain in the effort. A short while after this, she had uternie

pain followed directly by flooding. Dr. — was hastily summoned and upon examination found the cervical laceration wholly reopened, the gut in the tissues having either given way or having been absorbed. The accident was presumably brought about by the husband passing the catheter into the vagina, against one lip of the os, and by pressure separating the partially united cervix, to which the softened gut offered no resistance. The cervix was again closed by silver wire and the patient made a good recovery, with both of the operations a success.

CASE VII.—Mrs. K., a seemingly well-developed German lady, over thirty-five years of age, and the mother of several girls, one almost grown, was operated upon by Dr. — for a multiple cervical laceration. The operation was well performed, six silver sutures being inserted. On the evening of the third day she had a chill followed by fever. Dr. — requested me to see her with him the night of the fourth day, at which time her temperature was over 105°. Antipyrin was administered with but slight reduction of bodily heat. Next morning we again saw her together, and the temperature still remaining high with frequent chills, the two lowest sutures on either side were removed, and the cavity of the uterus washed out. Death occurred the night of the fifth day due to pelvic inflammation, septic in character.

The relation of these cases besides demonstrating that this operation is capable of relieving many subjective symptoms, directs our attention to its influence on fertility and its bearing upon the character of subsequent labors. Strangely enough, the medical literature of our country as it relates to these important subjects is very incomplete. Dr. B. F. Baer, of Philadelphia, in THE MEDICAL NEWS, Feb. 24, 1883, gives as his experience, that sterility does not usually follow as a result of the operation, directly contrary to observations of Dr. P. J. Murphy, of Washington, D. C. (see *American Journal of Obstetrics* for January, 1883), who asserts that repair of laceration of the cervix uteri is usually followed by sterility.

In five of my own operations, two were followed by subsequent conception and a delivery at full term; while of the remaining three, one has lived apart from her husband and for this reason could not be expected to give anything but a sterile history, another has scarcely had one year's time to demonstrate fertility, while the third was sterile for four years preceding the operation, so that to the trachelorrhaphy cannot be assigned cause and effect.

The result of the operation in my cases bearing upon the character of subsequent labors is partially in accord with that of Dr. Murphy, who states that this is unusually protracted and severe, and that in a large percentage laceration occurs a second time.

This statement that relaceration occurs must, I think, be received with much allowance and is not at all borne out by the subsequent history of my two patients. Even if it did re-occur, I do not think that either of them would resign the benefits derived from repair of her laceration and accept her former life of ill-health.

MEDICAL PROGRESS.

Treatment of Epilepsy.—The following are the details of PROFESSOR KOWALEWSKY'S (of Kharkhow) treatment of epilepsy, as given by him in a recently published article (*Russ. Arkiv. Psych. and Neurolog.* XII., 3, 1888). He takes cases which he considers possibly curable (those in which the epilepsy dates back less than ten years) and in these he reckons the minimum period for treatment at two years. This he divides into four equal portions or semesters for convenience in detailing his method. During the first half year he gives his patient a drachm of bromide of soda or such other bromide salt as is selected, each twenty-four hours, adding usually three to five grains of iodide of soda and giving the combination in two or three equal doses in the morning, before dinner, and at night in a large quantity of water. In case there follows any decided adynamia from this quantity of the bromides he decreases the dose somewhat, or in some cases intermits it for four or five days. During this semester also he stops the treatment during the catamenia in female cases.

In order, however, to have this plan succeed, it is necessary to allow a good supporting diet, though preferably one of milk and vegetable food. If there exists any scrofulous taint, cod-liver oil or iodide of iron is also administered. In case there should be any symptoms of brominism such as headache, neuralgia, etc., in the beginning of this treatment, it is not necessary to stop the treatment, as soon as it is relaxed a little these symptoms disappear. Much advantage is had in these cases from warm baths and rubbings.

Usually this treatment causes cessation of the attacks so that the patient is free from them during the last three months of the half year. Toward the close of the semester the medication is stopped for a period from two to six weeks before beginning it again.

In the course of the second half year the quantity of bromide and iodide is reduced one-half and given in the same way, and at its end there is again an interval of two to six weeks. In the third semester only the bromide is given and in doses of five to ten grains, morning and night, keeping up the same regimen and diet. In the fourth half year he begins with only five grains per diem and later only gives the medicine at intervals of one, two, three, four, or six days. After this the bromides are discontinued and the patient is given small doses of nitroglycerine or at intervals, in some cases, tr. simulo (*cap-faris coriaciac*), which is said to have a marked influence over epileptic attacks. Prof. Kowalewsky claims that he has by following out this plan of medication already had quite a number of cures, in which the attacks have not reappeared for over ten years, and that he has lost faith in the incurability of epilepsy.

Of course, in cases in which there is any specific or tubercular cause or complication the treatment must be adapted to meet the special conditions.

As regards other than medicinal treatment the author recommends electricity as an adjuvant in certain cases,

but cautions against its employment in any case in which there is a tendency to cerebral hyperæmia. He also found benefit in weak irritable anæmic cases from daily warm baths, of temperature of 25°-28° R. (88°-95° F.) for fifteen or twenty-five minutes, watching the condition and nutrition of the patient, and when these are improved using baths gradually lowered in temperature and not so prolonged. In some cases combined baths and electrical treatment are of advantage.

The author's ideas as regards diet are liberal, but he says that for all cases of epilepsy taken together, a vegetable and milk diet is best. Alcohol he forbids even in medicine, at least in the beginning of the treatment—he says he has seen the epileptic attacks revived by even a few drops of alcohol. Tea he allows in moderation, but he advises that coffee, chocolate, etc., be dispensed with at least during the treatment.

There are other points of interest in the article, but the above are the most noteworthy, especially the success that seems to have attended the author's method of using the bromides. The quantity given is certainly not large; not even in comparison with his own treatment in other cases, for he recommends as much as three or four drachms *per diem* in cases of epileptic furor. There would seem to be some special advantage in the method or the regimen presented to bring about such specially favorable results.—*American Journal of Insanity*, January, 1889.

The Treatment of Pernicious Anæmia, with Recovery.—In some remarks upon this subject (*Lancet*, Jan. 12, 1889), DR. BROADBENT said that until the publication of Dr. Byrom Bramwell's paper on the success obtained by the use of arsenic in pernicious anæmia, it was looked upon as truly progressive, and always to a fatal termination. Since that time there has been a change, and many cases have been published proving the efficacy of arsenic, recovery having frequently followed its employment; sometimes there appears to have been a relapse, and sometimes it has failed, but no treatment has yielded such good results. Iron, which in cases of ordinary anæmia is so efficacious, appears to be almost useless; but a case is recorded in which arsenic failed to cure, and the patient recovered on the administration of iron. Other treatment adapted to improve the general health, allay digestive disturbance, produce appetite, etc., has been recommended; and transfusion has been tried in some instances with success (see Coupland), but the use of arsenic is generally indicated. We dwell on this point, as a recent edition of a work on therapeutics does not draw attention to its great properties in such cases. Dr. Broadbent, in a former case which recovered, that of a woman, aged forty-three, who had been suffering for four months, gave the drug in frequent small doses, on the failure of iron, and obtained a cure in two months; in this case he followed a similar plan, giving liquor arsenicalis in two and a half minim doses every three hours.

Treatment of Baldness.—DR. LASSAR (*Therap. Ztsch.*, December, 1888) recommends for alopecia areata the following treatment: For the first six or eight weeks an experienced hand should thoroughly soap the scalp for ten minutes daily, using for this a strong tar soap. A good lather having been formed, it should be removed with an irrigator, using first lukewarm and then cold water. The cold douching will, after several repetitions, harden the scalp somewhat and prevent catching cold. After the scalp has been thoroughly dried the following lotion should be applied:

℞.—Solution of bichloride of mercury . . . 8 grs. to 5 oz.
Glycerin
Cologne water . . . āā ℥ij ℥v.

Then the scalp should be rubbed dry with alcohol, ninety per cent., to which one-half per cent. of naphthol has been added. The scalp now being freed from any fat whatsoever, the following is applied:

℞.—Salicylic acid . . . . 30 grains.
Tincture of benzoin . . 45 "
Neat's foot oil . . . . ℥iij ℥ij.—M.

This treatment carried out daily for some weeks will be followed with good results. Dandruff and itching will disappear. Hairs which are stiff and dry, become flexible and oily, and where no hair was, hundreds of small hairs will make their appearance. Of course, this only holds good when the hair-growth is not destroyed.

In very obstinate cases the following is worthy of trial:

℞.—Carbolic acid . . . . 15 grains.
Sublimed sulphur . . . 75 "
Fat from a horse's neck . . ℥iss.—M.

The author relies very much upon pilocarpin, which he prescribes either in the form of an alcoholic solution or pomade:

℞.—Muriate of pilocarpin . . 30 grains.
Vaseline . . . . . ℥v.
Lanolin . . . . . ℥iiss.
Oil of lavender . . . . 25 drops.—M.

That the addition of balsam of peru to hair pomades takes the place of an antiparasite is well known and the following would make an efficient though somewhat expensive pomade:

℞.—Muriate of pilocarpin . . 30 grains.
Muriate of quinine . . . 60 "
Precipitated sulphur . . ℥iiss.
Balsam of Peru . . . ℥v.
Ox marrow . . . . ℥iij.

Before applying the pomade the scalp should be thoroughly washed with soap and water and allowed to dry; then the ointment should be applied, but it should not be left on too long, before being again removed with soap and reapplied.

Tar in the form of tar-baths is also an excellent remedy as well as an antiparasite.—*Münchener med. Wochenschrift*, December 25, 1888.

Curability of Cirrhosis of the Liver.—DR. MILLARD, at a late meeting of the Société Médicale des Hopitaux, of Paris, presented three patients from his private practice, in whom, after a lengthy treatment for this affection, he had been able to effect a cure.

The first was a man, fifty-five years of age, who drank regularly from four to five bottles of wine daily. Suffering from dyspepsia for several years, he, in July, 1886, began to emaciate; the supervening ascites necessitated six tappings, from which over two hundred pints of fluid were removed. Since the month of November, 1886, the

patient has been put upon an exclusive milk diet, with the administration of an infusion of juniper, and drastic purgatives twice a week. At the end of four months the improvement was already well-marked. The second patient, who partook of four pints of white wine daily, had been under the author's care for one year only. The treatment was the same as in the first case; improvement showing itself more rapidly; the patient continues in excellent health. The third patient underwent the same treatment, with greater and more marked improvement than in either of the foregoing cases.

At present the three patients seem apparently quite cured, the only remaining sign of their trouble being a slight hypertrophy of the liver.

The formula of the juniper infusion is as follows:

℞.—Juniper berries	. . . .	℥ijss.
Infused in water	. . . .	℥vjss.
Then add		
Acetate of potassium Nitrate of potassium	.	āā grs. xxx.
Oxymel of squill	. . .	℥ijss–℥j.
Syrup of five roots[1]	. . .	℥j.

The author further remarked, that he never hesitated to have recourse to tapping, whenever diuresis seemed insufficient. The only food allowed was milk; alcohol in all forms was strictly withheld. The infusion of juniper is not disagreeable to the taste. The author administered it whenever an increased urinary secretion was called for. The patients took it readily, one of them having taken it daily for eight months.—*Revue de Thérapeutique*, January 1, 1889.

Laparotomy for Ectopic Pregnancy of a Non-tubal Variety.—PROFESSOR SERGHEI S. ZAIAITZKY, of Moscow, describes in the *Meditzinskoïe Obozreniè*, No. 16, 1888, a successful case of abdominal section for extra-uterine gestation in a multipara, aged twenty-five. The last catamenia had occurred about the end of October, 1887. Soon afterward she began to suffer frequently from giddiness (from which she had also suffered during her previous pregnancies), while she noticed a gradual, painless enlargement of her abdomen, as well as of the breasts, with occasional oozing of milk. Four months later she began to feel fœtal movements, which, however, ceased about April 27th; the abdomen then somewhat decreased in size, and became exceedingly tender and painful. On examination, on May 30th, ectopic pregnancy—either ovarian or, more probably, abdominal—of six months' duration, with dead fœtus, suppuration of the sac, and peritonitis, was diagnosticated, and immediate laparotomy at once suggested. The woman, however, hesitated for a few days, until the pains became intolerable and vomiting came on with fever and rigors and rapidly increasing prostration.

On June 8th Dr. Zaiaitzky made a median incision down to the peritoneum, which was found to be thickened and adherent to a thin-walled fœtal sac. The latter having been cut into, very offensive, cinnamon-brown, purulent matter escaped, and an almost black, macerated, and softened female fœtus was extracted. The sac proved to consist of fibrinous membranes adherent to the omentum, bowels, and the right Fallopian tube near its abdominal opening. The fimbriæ were considerably thickened, congested and covered with false membranes resulting from recent perisalpingitis, but the oviduct presented no sign whatever of having been ruptured or dilated. The tube was ligatured about its middle, and its external portion removed with the adherent placenta and sac, after which the peritoneal cavity was washed out with corrosive sublimate lotion and three drainage tubes were inserted (one through the vaginal fornix). The operation lasted about an hour. The temperature fell to normal the same evening. On the seventh day the drainage tubes were removed. On the 22d the woman was discharged quite well.

This case proves beyond any reasonable doubt that extra-uterine gestation may sometimes be of non-tubal origin. The only change found about the oviduct was an inflammatory hypertrophy of the abdominal end of the tube. No clinical symptoms of a tubal rupture had ever been present.

In the *Meditzinskoïe Obozreniè*, No. 1, 1888, Dr. Zaiaitzky described another successful case of laparotomy for tubo-ligamentary gestation (variety 2 *c*, according to Mr. Lawson Tait's scheme) of six months standing in a multipara, aged twenty-three. The whole sac was removed. No drainage was used. On the twenty-fourth day the patient was shown well and strong at the Moscow Obstetrical and Gynecological Society.—*British Medical Journal*, January 5, 1889.

Simple Treatment of Acute Coryza.—The *Schweizer Wochenschrift für Pharmacie*, No. 49, gives the following simple treatment for this affection:

Put one teaspoonful of powdered camphor in a cone-shaped vessel, filled with boiling water, and covered with a cornucopia, the top of which is then torn off just enough to admit the nose, and the warm camphor-vapor inhaled from ten to fifteen minutes. A repetition of this procedure after four or five hours, will generally suffice to effect a cure.—*Correspondence Blatt. f. Schweizer Aerzte*, January, 1889.

Papayotin in Fissures of the Tongue.—DR. SCHWIMMER has used papayotin (which is also known as papain) successfully in cases wnich had resisted the action of chromic acid, iodoform, and nitrate of silver. He employed the following formula:

℞.—Papayotin	. . . .	1 to 2 parts.
Glycerin Water	. . .	āā 10 parts.—M.

Five or six applications should be made daily, after drying the fissures.—*Amer. Journal of Pharmacy*, Jan. 1889.

Phenic Acid in the Treatment of Diphtheria.—DR. GAUCGER, from ninety-nine observations made with this remedy in the treatment of diphtheria, deduces the following conclusions:

1. The treatment of diphtheritic sore throat by ablation of the false membrane and cauterizations with phenic acid is applicable to children as well as adults.

[1] Syrup of five roots (sirop des cinq racines) is a French diuretic preparation, composed of the following roots: Ash, fennel, parsley, asparagus, and small holly, each 1 part, and sugar 30 parts.

2. All adults, and *almost* all children, treated by this method have recovered. (The restriction refers to very small children, with whom treatment was begun very late, or with whom croup set in rapidly.)

3. Applied in time, this treatment can prevent croup. as has been often observed by Dr. Dubousquet.

4. Even after tracheotomy the continuation of the treatment of the throat symptoms by this same method is essential.

The formula of the application employed for washing and cauterizing the throat is as follows:

Crystallized phenic acid	75 to 150 grains.
Camphor	ʒv–ʒj.
Tartaric acid	11 grains.
Alcohol (36°) } Olive oil }	āā ʒiiss.

Besides applying the above morning and evening the throat should be irrigated every two hours with a one per cent. phenic acid solution.—*Revue Thérapeutique*, January 1, 1889.

Alopecia Areata a Communicable Disease.—DR. O. LASSAR has demonstrated through a number of cases that the great increase of alopecia areata is due to the facility with which this disease is communicated to both young and old. Pillows and headgear, the barber's combs and brushes, have all in their turn been the medium of infection. It is to avoid such infection that the Berlin authorities, at the instigation of Dr. Koch, have concluded not to supply combs and brushes for general use at the public baths.

Dandruff alopecia is very infectious, and of the accuracy of this statement, the following small epidemics are cited as proof. Ten customers of a certain barber after having had their hair cut, began to lose their hair, and finally became completely bald. The further spread of this epidemic was prevented by the disinfection of the barber's instruments and utensils.

Twenty Parisian firemen suffered from alopecia areata the cause of which was traceable to their having used the same pillow, while stationed in a certain part of the town.—*Correspondenz Blatt für Schweizer Aerzte*, January, 1889.

A Mercurial Soap.—DR. SVETULKHIN (*Russk. medits*), in order to facilitate the absorption of pleuritic effusions, employs a soap, to which he has given the name of sapo kalinus hydrargyrosus, made by mixing together metallic mercury, mercurial ointment, caustic potash, and olive oil; one-third of the weight of the soap being mercury. The author claims that it is more easily applied than the mercurial ointment and less irritating to the skin.

To apply it take from a half to one drachm and agitate thoroughly in hot water, till it forms a soapy mass. In the treatment of serous pleuritic effusion, one or two applications are generally followed by rapid improvement, and the disappearance of all unfavorable symptoms is observed after the twentieth application.—*Nouveaux remèdes*, December 24, 1888.

Prophylaxis in Cerebro-spinal Meningitis.—The Berlin police intend to issue the following regulations to prevent the spread of cerebro-spinal meningitis: 1. Every physician shall at once report to the police any case that comes to his knowledge. 2. Patients are to be isolated. 3. The children of families in which there are cases are to be kept from school. 4. The sick rooms, expectorated matter, linen, handkerchiefs, clothes, and other belongings of the patient used during the illness are to be cleaned and disinfected.—*Lancet*, January 5, 1889.

Hydrochlorate of Apomorphine.—This drug has been extensively tried by DR. SOCQUART, of Bruxelles, as a remedy for certain kinds of coughs, particularly in distressing and frequent hacking, unattended with expectoration, or with exceedingly difficult expectoration. It is, as a rule, well borne, although a few individuals manifest a special susceptibility to its action, and rarely nausea, colic, or diarrhœa result from its administration. The dose is about $\frac{1}{20}$ of a grain, taken in water once in twenty-four hours. As the solution rapidly alters by keeping, it is advised to prevent its decomposition by the addition of a few drops of hydrochloric acid, which does not interfere with its therapeutic effects.—*Amer. Journ. of Pharm.*, Jan. 1889.

Pancreatin in the Treatment of Atrophic Catarrh of the Stomach.—In atrophy of the gastric glands or in the so-called atrophic catarrh of the stomach, the results obtained from therapeutic measures have thus far not been positive; it being impossible to restore the already degenerated glands. Being convinced that neither hydrochloric acid nor pepsin or any other remedies were of any use in the treatment of this affection, DR. REICHMANN, of Warsaw, tried in ten cases (out of one hundred and seven cases treated for various gastric affections) an alcoholic extract of the pancreas (twelve to fifteen per cent.) and pancreatin, and was soon convinced that the formerly sluggish chyme digestion was now properly performed, the general condition of the patients being greatly improved.—*Deutsche med. Wochenschrift*, Dec. 27, 1888.

For Gastralgia and Vomiting.—

℞.—Muriate of morphia	4 grains.
Muriate of cocaine	5 to 8 grains.
Tincture of belladonna	ʒjss–ʒijss.
Bitter almond water	ʒvjss.—M.

Sig.—Ten to fifteen drops every hour.—*Centrbl. f. d. ges. Therapie*, January, 1889.

The Juniper Berry as a Diuretic.—According to the *British Medical Journal*, Jan. 12, 1889, DR. GOLDSCHMID, of Fehraltdorf, highly praises the inspissated recent juice of common juniper berries as the best diuretic in children. Attention was drawn to this remedy by Dr. J. Vogel, of Dorpat, in his classical handbook on children's diseases. While being most effective, the remedy is exceedingly mild and altogether free from any unpleasant accessory effect. Two or three teaspoonfuls should be given daily, diluted with water and sweetened with sugar. The little patients take it very readily. The author describes a severe case of nephritic dropsy in a girl, aged seven, in which the juice rapidly induced a profuse diuresis, a complete and permanent recovery ensuing in a fortnight.

Five Cases of Extra-uterine Pregnancy.—DR. FASOAL (*Ann. di. Ost. et Gin.*, 1888, Nos. 4 and 5) reports that of 1565 cases of pregnancy treated between the years

1883 and 1885 at the clinic of Dr. Chiara, only five were of extra-uterine pregnancy. In one of these cases in which it was impossible to diagnosticated either tubal or ovarian pregnancy, the liquid contents of the ovum were removed through vaginal aspiration, and this was followed by a series of applications of the electrical current; these applications generally terminated with severe pain, which stopped abruptly twenty days after beginning the treatment. A slight hemorrhage then followed, accompanied by a discharge of uterine secretions and a diminution in the size of the tumor which became hard and encysted.

In the second case, which was followed by the death of the fœtus through rupture of the ovum into the peritoneal cavity, laparotomy was performed, after the death of the mother, and revealed a seven month abdominal pregnancy.

The three remaining cases terminated in rupture of the cyst and recovered without surgical interference.—*L'Union Médicale*, December 27, 1888.

Thymol in the Treatment of Tuberculosis. — DR. W. PHILIPOWICZ has administered thymol to 38 patients, 17 of whom were treated exclusively with this remedy, whereas the remaining 21 were given the preparation after diarrhœa had set in. The results of the first group were: 10 improvements and 4 deaths, while 3 remained under treatment. The results of the second group are not given, as the treatment was not a uniform one. Thymol was administered in daily doses of 45 grains, being given in gelatine capsules, in which medium the burning taste of the drug was less noticeable. Under the administration of thymol a diarrhœa will generally disappear in from two to four days, except when there exists amyloid degeneration of the intestinal walls. The drug can be taken for some time without producing any harmful effects; in fact, it seemed to the author that under its administration both the appetite and digestion were improved. In hæmoptysis it diminished the cough and the expectoration, it lowered the temperature, produced a gain in the body weight; in short, a general improvement of the bodily condition, except in cases in which the disease was too far advanced.—*Wiener med. Presse*, Jan. 6, 1889.

Trigeminal Neuralgia.—

℞.—Butyl-chloral hydrate . .	30 to 75 grains.
Alcohol	ʒiiss.
Glycerin	ʒv.
Water	ʒiv.—M.

From three to four tablespoonfuls at a dose when required.—*Centrbl. f. d. ges. Therapie*, January, 1889.

Hereditary Syphilis.—At a recent meeting of the Imperial Royal Society of Physicians of Vienna, PROFESSOR NEUMANN read a paper on hereditary syphilis and presented the following conclusions: 1. A syphilitic mother may convey the disease to her offspring at any stage of her affection, whether the infection had taken place before or after the conception. 2. A mother who had contracted the disease after conception sometimes transmitted it to the fœtus. In the case of a pure post-conceptional syphilis the transmission of the affection to the child was extremely rare, and particularly when the mother had become infected in the last months of pregnancy. 3. When the infection of the mother had taken place after conception, and the father was syphilitic at the time of procreation, the effect on the offspring was greatly intensified; the children in these cases died *in utero*, or were born with signs of syphilis. 4. In the case of post-conceptional syphilis, where the infector was unknown, the proportion was the same as in pure post-conceptional syphilis; syphilis acquired in the last months of pregnancy was usually transmitted to the offspring. 5. When infection and conception occurred at the same time, the children died in one-half of the cases. It was nevertheless remarkable that a great part of the offspring remained free from syphilis, in spite of the fact that the disease was in an active state in both the parents at the time of conception. This disproved the assertion that a healthy child could never be born when both parents were syphilitic at the time of conception. On the other hand, the assertion that healthy children were born only when the syphilis of the parents was seven years old, was also negatived. 6. In the case of infection before conception, the period at which conception occurred had to be taken into account; the longer the interval between infection and conception, the more favorable was the prognosis of the offspring. 7. The offspring had the best chance when the mother only contracted syphilis in the last months of pregnancy, while the father was healthy at the time of procreation; the same was also true of the offspring of parents suffering from tertiary syphilis. The offspring had the least chance when infection and conception had occurred simultaneously, or when the father was suffering from recent syphilis at the time of procreation. 8. This last observation also elucidated the question as to paternal syphilis. It was especially these cases in which the father was syphilitic at the time of procreation, and the mother became infected only after conception, and the child was soon after the infection born in a macerated condition, which proved the extremely injurious nature of paternal syphilis. This was opposed to the observations of Boeck and Deware, who stated that the child of a syphilitic father was always healthy. These data, concluded Professor Neumann, showed the sad fate of the children of syphilitic parents, as, out of one hundred and nine cases, only forty-four were born healthy, and according to inquiries made by Dr. Friedinger, director of the Vienna Foundling Hospital, only the minority of them lived. Hereditary syphilis must, therefore, be considered one of the most terrible plagues of infant life.—*British Med. Journal*, Jan. 12, 1889.

Treatment of Infantile Typhoid Fever.—LEGROUX and PARAT recommend the following formula in cases in which the diarrhœa is marked.

℞.—Salicylate of bismuth } Naphthol } . .	āā 40 grs—M.

Divide into six powders; give one nearly every hour in unleavened bread, or milk, in either of which it is well retained, without nauseating the little patient.

If the diarrhœa is not troublesome, the bismuth can be dispensed with. If constipation is a prominent feature, administer:

℞.—Naphthol	40 grains.
Salicylate of magnesia . .	40 to 90 grains.

Divide into six powders, one every hour.—*Gazette Médical de Montreal*, December, 1888.

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SATURDAY, FEBRUARY 2, 1889.

RUPTURE OF THE HEART.

MEYER reports from the Pathological Institute of Munich (*Deutsches Archiv für klinische Medicin*, Bd. 43, Hefte 4 and 5) 9 cases of this rare condition, and analyzes 25 cases which have been recorded in the literature since 1870. As indicating the rarity of heart rupture, he states that of the 12,000 to 13,000 sections made at the Munich Institute, since 1854, there have been only 7 cases.

The older writers believed that a normal heart might break or rupture, owing to an excess of intraventricular pressure, the result of a sudden vascular disturbance due to psychical causes; but a review of more modern literature would seem to establish definitely the fact that some prior change invariably exists in the muscle. In several cases there has been a new growth in the cardiac wall; in one instance, an echinococcus cyst determined the rupture; and, occasionally, ulcerative endocarditis, when mural, will perforate and cause death by hemorrhage into the pericardium. Practically, the great majority of cases depend upon two conditions — myocarditis and fatty degeneration. What we term myocarditis is usually the result of a lesion of a branch of the coronary artery; either an acute endarteritis, such as may occur in the specific fevers, or a chronic sclerosis of the vessel which leads to a fibroid condition of the muscle. The local disturbances of nutrition caused by the blocking of a terminal branch of a coronary artery produce the condition known as infarct of the heart; or, as it is sometimes called, anæmic necrosis. To this softening, which may be extreme, the term myomalacia has been applied by Zeigler. The danger is not alone at the period of preliminary softening, but time gradually effects a transformation of the softened areas into fibrous tissue, which yield and lead in many cases to aneurism of the cardiac wall and rupture.

In fatty degeneration we know that the most extreme grade may be reached without danger to the integrity of the heart muscle, so long as the process is uniform, but a localized fatty change which follows the gradual obliteration by endarteritis of a branch supplying a limited area of the cardiac wall, seems to precede rupture in a number of cases.

The relation of arterio-sclerosis to the changes which are associated with heart rupture, is indicated by the fact that in the majority of cases the patients are advanced in life. The mean age in Elléaume's cases was sixty-five years.

The left ventricle is the one most frequently involved. In Meyer's cases, in 25 the rupture was of the left ventricle, 7 of the right ventricle, and 4 of the right auricle. The apex of the left ventricle is usually the site of the laceration, probably, because it is in the long branch of the left coronary artery which supplies this region that the most frequent atheromatous degeneration is found. Moreover, here, at the point of the left ventricle the muscular layers are thin. The tear is usually small, but in one instance it extended from the base to the apex of the ventricle. More commonly, the opening is of a fistulous character, and oblique in direction. There may be as many as five separate breaks. The rupture is not necessarily followed by immediate death; there are cases in which the symptoms have persisted for hours or even days, probably, owing to the fact that a small laceration has occurred and which has gradually extended.

In a number of cases death occurs suddenly, without any premonition; in other cases, precordial distress, pain in the left side, and signs of cardiac trouble have preceded the fatal illness for days or even weeks.

The determining cause is not infrequently severe muscular exertion. Emotion, as excessive grief or excessive joy, though popularly believed to be frequently the cause of a broken heart, is in reality rarely mentioned as a determining factor. Undoubtedly, the direct cause of death is compression of the heart by the effused blood within the pericardium. Spontaneous healing is scarcely possible

when the perforation is direct or complete. But there is a case on record in which the pericardium adhered around the orifice with the production of an aneurismal sac, which finally led to death by perforation into the pleura.

PHENACETIN.

THE question as to the value of phenacetin as an antipyretic and analgesic is at last being determined with some degree of certainty. The studies of Hinsberg and Kast, of Rumpf, and of many other accurate observers, both in this country and abroad, have, heretofore, frequently been pregnant with contradictions and failure, and while the drug has been lauded by continental writers it has failed in England and America.

In the *Deutsche medicinische Wochenschrift* of December 13 and 20, 1888, MAHNERT, of Graz, has, in a communication entitled: "Phenacetin from a Physiological and Clinical Standpoint," given us the results of his experience with this compound. In the instances where he employed it to reduce temperature, the fall produced by it was very marked. Thus, in one case of rheumatic polyarthritis fourteen grains of phenacetin caused the temperature to fall from 102.2° to 97.8° in five hours, followed by a rise of 2.7°. The pulse-tracings before and after the use of the drug, when compared gave no evidence of cardiac depression. In another instance a temperature of 102.9° was reduced in three hours to 98.6° by twenty-three grains, but rose again in five hours to 104°, and finally reached, three hours later, almost 104.3°. At this point the drug was used again in the same dose, and there ensued a steady fall of temperature to 96.8° in five hours, remaining at this point for one hour, when it began to rise again, and in two hours reached 104° once more.

The conclusions to be drawn from these studies on the action of phenacetin in fever seem to be that it is no better than any other pure antipyretic, such as antipyrin, and that it lowers temperature much more slowly than do most of the other members of the group. Therefore, it can be employed for the reduction of temperature, not where a hyperpyrexia threatens life and a rapid fall is required, but where a more slow and persistent influence is desired.

As to its analgesic effects, our information is more meagre but more concordant. So far as we are aware, phenacetin certainly gives relief in locomotor ataxia, and in some forms of neuralgia, and the experiences of Mahnert are in accord with this belief. It may be used in headache in the dose of five to ten or even fifteen grains, provided the pain is neuralgic in character; it also has been highly praised in ovarian neuralgia and hemicrania, and in various other evidences of morbid nervous states.

THE State Board of Health of New York in the early part of the week notified the health boards in all parts of the State that the smallpox had become threatening in the Onondaga County Poorhouse, the penitentiary at Syracuse, and at Lyons and other places in Central New York. They urge all the people to get vaccinated, and directed a special lookout to be kept for tramps.

THE Boston Medical Library Association, last Tuesday evening, gave a reception to Dr. Oliver Wendell Holmes, its President from 1875 to 1888, when his medical library was formally presented to the Association and accepted.

THE Middleton-Goldsmith Lecture for 1889 will be delivered before the New York Pathological Society, on February 16th, at 8.30 P.M., at the hall of the Academy of Medicine, by Dr. R. H. Fitz, of Boston. The subject will be "Acute Pancreatitis, with an especial Consideration of Pancreatic Hemorrhage, Hemorrhagic Pancreatitis, and Subperitoneal Fat Necrosis."

A MUNICIPAL hospital for contagious diseases is about to be built for the city of Brooklyn. A plot of ground has been purchased at a cost of sixteen thousand dollars, and the further sum of sixty-five thousand dollars has been appropriated for buildings, which will be erected under the direction of the Commissioner of Health. The plans have been prepared upon the pavilion system and will admit of as many structures, rapidly and cheaply built, as any possible emergency may demand. The accommodations will be such that patients who can pay for private rooms may be received as well as others whose treatment is a public charge.

THE Empress Augusta has offered, in connection with the German Society of the Red Cross, a prize of $2500 for the best portable military hospital. The award will be made at an exhibition to be held in Berlin, in June. All countries are invited to exhibit.

IN the matter of the publication in the *British Medical Journal*, in breach of professional confidence, of the "script" of the late Emperor Frederick reflecting upon one of his medical attendants, the Council of the British Medical Association, at a meeting held on January 16th, directed a letter to be addressed to Sir Joseph Lister, as the representative of the signatories to the memorials forwarded to the Council in December, stating that the Council "having received and published an expression of regret from the Editor, and having themselves expressed their strong disapproval at the publication of anything in the least degree tending to a violation of professional confidence, they feel that they have done everything which was necessary to vindicate the honor of the Association and of the profession." The Council also forwarded to Professor von Bergmann a copy of the resolution of disapproval passed last November.

THE Eighth Congress for Internal Medicine will be held at Wiesbaden, Germany, on April 15 to 18, 1889. Professor von Liebermeister, of Tübingen, has been chosen President. Professor Schultze, of Bonn, will deliver an address in commemoration of Dr. Rühle. Among the principal subjects to be brought up for discussion are: Ileus and its treatment; and the nature and treatment of gout. Besides these a number of papers have been already sent in, including ones by Professor Immermann, of Basel, Professor Fürbringer, of Berlin, Dr. L. Lewin, of Berlin, and others.

A NAVAL EXAMINING BOARD is now in session at the U. S. Naval Hospital, Philadelphia, for the examination of candidates for admission into the Medical Corps of the Navy as Assistant Surgeons. The Board will remain in Philadelphia until the 31st of March, 1889, and after that date it will hold its sessions at the Naval Hospital, Brooklyn, N. Y. There are fourteen vacancies in the grade of Assistant Surgeons.

REVIEWS.

TRANSACTIONS OF THE ASSOCIATION OF AMERICAN PHYSICIANS. THIRD SESSION, HELD AT WASHINGTON, D. C., September 18, 19, and 20, 1888. Volume III. 8vo. pp. xx., 404. Philadelphia, 1888.

This is the largest and most valuable volume which has yet been issued by this vigorous Association, and it represents the work done at the meeting held in conjunction with the late Congress of American Physicians and Surgeons. It contains twenty-five papers of a uniformly high standard of excellence and of marked practical value.

Where there is so much to praise it seems invidious to single out any one paper for notice, but since no adequate abstract of it was at the time published, we cannot refrain from calling attention to Dr. Jacobi's valuable contribution to the anatomy and pathology of the thymus gland, which is richly illustrated by fourteen plates. The groups of papers on typhoid fever, on the relative value of albumin and casts in the urine, on diseases of the heart, on the treatment of phthisis, on the relation between trophic lesions and diseases of the nervous system, and on antiseptic medication reflect the latest and best thought of the day, and are deserving of careful study. Dr. Sternberg's paper on his recent researches on the etiology of yellow fever, although negative in its conclusions, is also timely and valuable.

SOCIETY PROCEEDINGS.

CINCINNATI ACADEMY OF MEDICINE.

Stated Meeting, January 21, 1889.

THE VICE-PRESIDENT, WILLAM JUDKINS, M.D., IN THE CHAIR.

DR. B. K. RACHFORD read a paper on

THE ETIOLOGY OF DIPHTHERIA.

(See page 113.)

DR. ROBERT W. STEWART did not think there could be any doubt among those who treated diphtheria as to its local character. It at least begins as a local disease; and the constitutional symptoms come on later. There were, however, one or two things which the speaker would not like to accept as dogmatically as the essayist presented them. First of these was that, by treating the local manifestations, we may hope to abate the constitutional symptoms. There is certainly something about this disease, in its inception, in its course, and in its results, that indicates more than merely a local character. It is, perhaps, a local disease for only a short time. He feared that the term "diphtheria" is used to cover a multitude of sins. He did not believe, for example, that the tonsillar diphtheria, as we usually see it is the same disease as the virulen nasal diphtheria which sometimes occurs.

DR. L. FREEMAN remarked that the opinion expressed by the last speaker as to the variety of th affections grouped under the designation diphtheria wa that held by Löffler, Flügge, and a number of other bacteriologists. Baginsky, in his recent work on *Diseases of Children*, supports this view. These all hold that there are a number of diphtherias, each due to a special microorganism.

DR. C. W. TANGEMAN spoke of the occasional occurrence of diphtheria of the conjunctiva, of the eyeball and lids, and stated that a case of this character had come under his observation within the past two weeks. The poison, when attacking the eye, does not manifest always the same degree of virulence, as it sometimes destroys the globe within from thirty-six to forty-eight hours, whereas, at other times, it pursues more of a

chronic course. He expressed disappointment that Dr. Rachford had not advanced anything that might aid us in the prevention of such accidents as the inoculation of the eyeball, or that would cut short the course of the disease when once developed.

DR. J. L. CLEVELAND thought that Dr. Rachford had given us a very valuable hint as to the best means for the prevention of the accidents referred to by the last speaker, when he pointed out the fact that the micro-organism of diphtheria is, in all probability, an external parasite, incapable of existence within the body of man. This, he thought, gave us some hope that we may be able to do something, both for the prevention of the inoculation of external parts of the body, and for the prevention of constitutional manifestations. Most of us are too much in the habit of considering diphtheria a merely constitutional disease from the start, and, although we treat it locally, we do not expect much result. The paper explained another point which had repeatedly been observed by the speaker, and that was the tendency of the disease when seated in the trachea to extend downward. He could not, however, accept the theory that one attack of diphtheria confers immunity from succeeding attacks, as he had repeatedly seen a second, and, in a few instances, a third attack in the same individual. In this respect he thought the popular idea is correct.

DR. G. S. MITCHELL thought there was a good deal of truth in the idea of immunity. A few years ago he had held to the view that diphtheria is a constitutional disease from the start; now he considers it both local and constitutional. He had seen cases in which the redness of the fauces, the pain, and the elevation of temperature preceded by twenty-four to thirty-six hours the exudation in the fauces. He thought it probable that he had, in some instances, done more harm than good in the forcible treatment of children affected with this disease, and that the wedging apart of the teeth and the thrusting of a brush into the fauces were capable of aggravating the constitutional disturbance, He now resorted more to the use of sprays of the benzoate of soda and other alkalies, trusting further to constitutional treatment.

DR. WILLIAM JUDKINS had formerly believed that immunity was conferred by one attack of diphtheria, but he had, within the last eighteen months, abandoned that idea, from the occurrence of a second attack in former patients.

DR. E. E. SATTLER was a firm believer in the local character of diphtheria, and he believed that the disease is diphtheria wherever it is found. In times of cholera, we have mild cases, in which there is only a little diarrhœa; in times of typhoid fever, we have walking cases; and in times of scarlet fever, we meet with very mild cases; so we may have every variety of diphtheria. The variety of the disease may depend upon the amount of poison that is taken into the system, but that is a point on which we know too little to engage in discussion, as we do not know what is the cause of the disease. As regards the ptomaines, it is a question whether the bacilli, which Löffler and Klebs show to be present, may not simply carry the alkaloids which happen to be present into the system, or are, as the essayist asserts, produced by the bacilli at the point of entrance into the system. The speaker thought that, in the majority of instances, tonsillar diphtheria precedes the nasal development of the disease. As regards post-diphtheritic paralysis, he could not agree that it is due to degenerative changes in the nerve-cells or nerve-endings, for, if this were the case, the affection would not so readily yield to treatment.

DR. A. N. ELLIS inquired why, if diphtheria is a local disease, we have a membrane formed on any abrasion which happens to occur in the skin of the patient suffering from the disease. Does not the poison reach the abrasion through the blood-circulation?

DR. JOSEPH RANSOHOFF replied to this that he had seen very many slight wounds in the skin of children suffering from this disease, and that he had not once seen diphtheria develop in them. He had but once seen it follow tracheotomy. In the text-books we read that many cases die of wound diphtheritis. This he thought a peculiar survival of a misstatement. The fact that so many wounds escape infection the speaker held as one of the strongest corroborative evidences of the local character of the disease.

As regards the question of immunity, he did not think that one attack protected the individual from subsequent attacks. Immunity is a quality which belongs to constitutional diseases. It is an attribute of venereal diseases. Syphilis, a constitutional disease, confers immunity, whereas gonorrhœa, a local disease does not. In the light of the paper under discussion, he said that if he had occasion to treat a wound in a diphtheritic subject in the future, he would seal the wound up as tightly as it could be sealed.

DR. T. P. WHITE asked Dr. Rachford to explain how the albuminuria which sometimes follows diphtheria originates. Is it or is it not due to the action of the ptomaines?

DR. DAVID DEBECK said that diphtheritic conjunctivitis always occurs synchronously with the tonsillar or pharyngeal lesions of the disease. It is, however, an affection that is almost never seen in this country. It is as rare as is leprosy. As regards diphtheritic ophthalmoplegias, they support the idea that paralysis occurs more frequently in mild cases. He did not recall an instance of paralysis affecting the eye as a result of a severe attack of diphtheria. They also support the theory that the paralysis is due not to organic, but to functional disturbance, and that the disease is local. The ophthalmic infection in diphtheria is not a direct result of the disease, but is indirect.

DR. GEORGE W. RYAN stated that his experience with post-diphtheritic paralysis had been that it was very amenable to treatment. He looked upon the cases as hardly needing faradization. It is customary to give the patients tonics, and a little massage. This would rather contraindicate the presence of nerve degeneration, or, if such be present, it must be very slight in degree.

DR. WALTER S. CHRISTOPHER, at the request of Dr. Rachford, stated that the gases of the intestinal canal are, for the most part, of a reducing character, that is, directly the opposite of oxidizing. We find that the most prominent gas is carbonic acid gas, which, while it contains some oxygen is not an oxidizing product. Marsh gas is also present, and free hydrogen and also nitrogen to a ceetain degree, but analysis has failed to show the presence of any oxygen. In a recent experiment of introducing into the intestine a large quantity of oxygen for the purpose of conveying the gas through the portal

circulation to assist the liver in the destruction of ptomaines, and perhaps in certain other of its functions, it was demonstrated that when oxygen comes into contact with the mucous membrane of the intestine, it is taken up into the blood almost as readily as it is absorbed by the capillaries of the lungs, showing that the intestine may perform a respiratory function. This shows us further, that if oxygen is formed or introduced into the intestinal canal it is in all probability readily absorbed. He thought that, in the case of the germs of diphtheria finding lodgement in the intestinal canal, it was probable that they obtained their oxygen from the intestinal wall, just as other germs do. The union between the oxygen and the hæmoglobin in oxy-hæmoglobin, although chemical in its nature, is so feeble as to constitute little more than a mechanical union, very readily disturbed.

DR. RACHFORD, in concluding the discussion, stated that it had not been his desire to present anything new or startling in the study of diphtheria. It had rather been his desire to study the testimony in regard to the disease from various sources, and from it to arrive at conclusions not arrived at by others. He had tried to avoid dogmatic statements, and, previous to making any statement, had given the testimony upon which he had based it. The statement which Dr. Stewart has pronounced as dogmatic, had been taken directly from one of the greatest authors of the day, Jacobi, and the argument he had made in that connection had been made solely on the strength of that statement.

He expressed surprise that his statements had met with so much support this evening, inasmuch as they were not orthodox. Few of his conclusions, in fact, were at all orthodox. That the disease is local, is not orthodox; that it is due to a germ, has not been altogether recognized; that the germ is aërobic is not orthodox; that one attack gives temporary immunity, is contrary to the statements of Jacobi, Smith, and other writers. He thought that the varying severity of the constitutional symptoms is best explained as due to the entrance of the germs of decomposition into the blood, not as a part of the disease, but as an accompaniment of it.

The question as to why certain diseases are self-limiting, is a perplexing one. Why is it that any of these self-limiting diseases stop of their own accord? We do not know, and we can only suppose, that some change has taken place which terminates the disease; and it seems reasonable to suppose that the condition which brought about this cessation of the disease would give immunity. And a point which he brought out in the paper was that, therefore, self-limited diseases upon this theoretical ground, must necessarily produce a certain amount of immunity—at least, a temporary immunity—for it is the acquisition of this immunity which terminates the disease. Why is it that the disease does not return again to a former spot in the throat; why does the individual not become re-inoculated after the disease has in part subsided? He was aware that Jacobi, who believes that the patient may become re-inoculated, recommends that the patient be frequently changed from one room to another, in order that he may escape from his own virus; but he did not think that clinical experience will support this theory. Why, too, is it that one little patient running about the room during convalescence will not be re-infected from his brother, who is going through an attack subsequent to his?

Yet, there is reason to believe that the immunity does not exist for any great length of time. It may last for one, two, or three years, owing to the severity of the constitutional symptoms. If the throat has been left in an inflamed and irritated condition by the disease, so that there is a favorable soil for the lodgement of germs, then the previous attack will predispose to a second. This, he stated, was most likely to occur in individuals in ill health, scrofulous, tuberculous persons.

As to the explanation of kidney trouble, the speaker referred to the fact that certain chemical reagents, when introduced into the body, will bring about very marked changes, fatty degeneration, etc., and various other changes, such as we find in the kidneys. The microscope does not reveal these agents. It is not in every case of albuminuria that we find microörganisms. The testimony of the microscope is not, therefore, of much value. As albuminuria is not necessarily due to the entrance of germs, that which follows diphtheria may have an entirely different origin.

In regard to the asserted presence of degenerative changes in the nerves as a cause of the post-diphtheritic paralysis, the essayist did not agree with the previous speakers that such degeneration would necessarily argue an unfavorable prognosis. On the contrary, Welch, in his Cartwright lecture, shows that fatty degenerations in the liver, kidneys, and other organs result from fever. He further shows that these degenerations rapidly disappear after the subsidence of the fever. The speaker saw no reason that the degenerative processes which develop during the course of diphtheria as a result of the direct action of ptomaines, might not as rapidly disappear upon the subsidence of the cause. It is not rational to suppose that a soluble alkaloid will remain in a body six, eight, or ten weeks after the disease has subsided, and then produce a paralysis. It is, however, reasonable to suppose that the ptomaines may have acted in such a way as to produce a slight change, to set up a certain degenerative process, but not to such an extent as to produce paralysis; but afterward, on account of the low condition of the body, on account of the leucocythæmic condition of the blood, and the low condition of the patient generally, this degeneration will continue until, four, five, or six weeks after the attack, paralysis will be produced. The arguments against this view by J. Lewis Smith are those presented in the paper, namely, that the paralyses are frequently degenerative, and may occur early. These cases are not those which occur after the attack, but those which occur during the attack, and are a result of the direct action of the ptomaines.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, January 17, 1889.

THE PRESIDENT, A. JACOBI, M.D., IN THE CHAIR.

DR. PAUL GIBIER, Assistant to the Chair of Pathology of the Museum of Paris, read a paper on

YELLOW FEVER: AN EXPERIMENTAL RESEARCH ON ITS ETIOLOGY.

(See THE MEDICAL NEWS, January 26, page 91.)

DR. L. DUNCAN BULKLEY then read a paper on

UNUSUAL METHODS OF ACQUIRING SYPHILIS, WITH REPORTS OF CASES

(which will appear in full at an early date in THE MEDICAL NEWS).

SAMUEL T. HUBBARD asked whether, in Dr. Bulkley's opinion, syphilis could be conveyed to a sucking infant through the milk of the nurse when the latter, so far as could be made out, was entirely free from any lesion of the disease. A case which he believed to be of this kind, in which there was apparently no other source of infection, had occurred under his observation.

DR. BULKLEY replied that two observers had made experiments with the injection of milk from syphilitic women, and while one claimed that syphilitic infection was thus conveyed, the other met with negative results. At the present day most writers are inclined to deny that the disease could be transmitted by milk alone, and hold that when this was apparently the case, the infection was really carried by some secretion associated with it.

THE PRESIDENT, DR. H. JACOBI, said that there was one circumstance which might explain how, under certain conditions, the milk might be the means of transmitting syphilis. There was some milk which might be capable of doing so, and some which was not. In the perfectly healthy woman milk was a true secretion, made in the mammæ, and not a transfusion from the blood. There were, however, a number of conditions in which the milk was in a large measure simply a transudation. In anæmic or convalescent women, or in those reduced in strength by prolonged nursing, the milk changed its character, and the mamma became for the most part a filter, through which was transmitted the serum of the blood and whatever might be floating in the blood. Thus, when the nursing woman was healthy, medicines would not be transferred through the milk to the child, while if her system became reduced from any cause, lead, iron, iodide of potassium, and other drugs would be thus conveyed. From these facts, therefore, he could not doubt that under similar circumstances it was possible that syphilis could be transmitted by means of the milk.

SECTION ON THEORY AND PRACTICE OF MEDICINE,

R. C. M. PAGE, M.D., CHAIRMAN.

Stated Meeting, January 15, 1889.

ELECTION OF OFFICERS.

DR. R. C. M. PAGE was elected *Chairman*, and DR. G. R. ELLIOTT, *Secretary*, for the ensuing year.

DR. SCHUMAN LE CLERCQ, of Carlsbad, Austria, read a paper on

THE INFLUENCE OF CARLSBAD WATER ON URIC ACID EXCRETION.

The beneficial effects of the "Carlsbad cure" in gout, he said, had been recognized by the profession for centuries past, but the theoretical grounds upon which an indication for this treatment might be based had been as vague as the theory of gout itself. Prof. Seegen was the first to establish a positive theory to explain the action of the water. From his investigations he concluded that it caused a diminished nitrogenous metamorphosis and a decrease amounting to practical disappearance of uric acid; and it was generally believed that the effect of the Carlsbad water in gout depended upon its power to counteract the increased conversion of nitrogen inherited or acquired by high living; this being the conception of the pathogenesis of gout which prevailed at that time. Prof. Voit, detecting the sources of error which led Seegen to his incorrect conclusions, definitely refuted the theory of a lessened organic metamorphosis from the use of Carlsbad water, and the extensive discussion which then arose ought, he thought, to be considered as having settled this question; so that a recent attempt to revise it was undoubtedly a mistake.

As to the second point, the gradually diminished elimination of uric acid, Dr. Le Clercq said that he had been unable to find any account of further investigation, and Seegen's opinion continued to be accepted in the treatises on bacteriology and gout. At the suggestion of Dr. Hermann, of Carlsbad, he made a series of careful experiments upon his own person with the view of ascertaining whether the diminution of uric acid excretion under the influence of Carlsbad water, as claimed by Seegen, could be proved by our recent exact methods of quantitative analogies for uric acid. He made use of a method recently advocated by Prof. Haycraft, of Aberdeen, slightly modified by Dr. Hermann, and combated by him with Ludwig's method, and the analyses were made at Prof. Huppert's laboratory at the University of Prague. Haycraft's method was essentially as follows: By adding to the urine bicarbonate of soda and a solution of silver nitrate, previously rendered ammoniacal, a white gelatinous precipitate of urate of silver (and of phosphates) is obtained, which will not be reduced before it can be collected and washed on a felt-like filter compound of asbestos and broken glass. The ready solubility in nitric acid of this urate-precipitate is used for estimating the silver by Volhard's method, and we then calculate the uric acid by its combination with silver.

The experiments were continued from September 19 to October 20. Having analyzed his daily amount of uric acid for five days, while placed upon a regulated diet and mode of life corresponding to that of Carlsbad patients, he took Carlsbad water every day in gradually increasing quantities, and determined the amount of uric acid excreted during each twenty-four hours. One hundred grammes of urine were used for two parallel tests. A table containing the results of his investigations showed that the daily amount of uric acid was, upon the whole, unaltered by the use of Carlsbad water. The quantity remained between 80 and 108 centigrammes a day, and the total amount executed in a period of five consecutive days varied only between 4.023 and 4.890 grammes. During the time that the experiments were carried on, he lost 2950 grammes in weight.

Dr. Le Clercq had arranged in a table a *résumé* of the results of the experimental researches of different authors with regard to the influence of various agents on the excretion of uric acid. In connection with it he called attention to the great difference of opinion existing on every point, which showed that as yet no definite conclusions could be reached on this subject. Many of the analyses were made with inaccurate chemical methods, and all the tests were not made with the urine of twenty-four hours; while the series of experiments, with a few exceptions, were not long enough to yield results that could be compared. The increase or decrease of uric

acid was not necessarily due to any extraneous factor, as claimed, since similar fluctuations were also observed under normal conditions. The latter fact was illustrated in the experiments on himself. Although he was most careful in regard to every detail, he could not at times avoid considerable variations in the uric acid excretion any more than other observers; although he admitted that some of them were more fortunate than himself in this regard. This variation in the amount of uric acid was all the more striking in his own case, since by his strict adherence to a uniform diet and mode of life, every possible source of variation, in so far as the excretion of uric acid was concerned, was thoroughly excluded, and certainly, if any effects of the Carlsbad were demonstrable, every opportunity was afforded for their exhibition. It was to be remembered, however, that, according to Newbauer, the amount of uric acid, unlike urea, depended less on the food eaten than on special internal conditions of the organism, and that it varied greatly even in the normal state. Lehmann's tests on his own person also pointed to the fact that the nature of the food influences the excretion of uric acid much less than that of urea.

Since, therefore, no external causes could influence the daily variations in his uric acid excretion, he could only ascribe them to internal causes, such as a regulating nervous influence. In fact, there were authors who attributed the final regulation of uric acid production and excretion to the nervous system. According to Latham, gout was caused by a disturbance of the vasomotor centre, which influences the processes of organic metamorphosis, particularly in the nervous system. The atypical formation of uric acid in the muscles in gout, as accepted by Ebstein, could be considered from the same standpoint. While Garrod's thread experiment favored an idea of an excess of uric acid in the blood of the subject of gout, and though he himself afforded the experimental proof that uric acid is the "materia peccans," Eberstein did not consider it necessary to accept a general accumulation of uric acid, at least for the primary form of articular gout, because a localized retention of uric acid or a formation of uric acid in a *wrong place* (independent of increased production), could satisfactorily explain the development of gouty symptoms. Moreover, though it was universally agreed that in leucæmia there are increased formation and excretion of uric acid, this disease was never combined with gout, for which we must assume a disposition for a weaker resistance of certain organs against uric acid, either inherited or acquired. All this, he said, fully proved that the indication afforded by the secretion of uric acid cannot always be taken as an index of the quantity formed in the system (Garrod), and that the beneficial influences of a remedy in the uric acid diathesis cannot possibly be proved by analysis of the urine.

Although his experiments were made on a healthy individual, the same conditions as noted above would undoubtedly prevail in gouty patients. If, however, experiments were made on the latter under the same conditions, the question would inevitably present still greater difficulties, as the particular plan of the disease present in any case would add still greater complications to the results. For these reasons he was inclined to believe that in the future the influence of a medicinal agent on the increase or decrease of the uric acid excretion would not be conclusive as regards its indication or contra-indication in gout.

From a general review of the results obtained in his experiments he felt compelled to say that a decrease of uric acid excretion under the influence of the Carlsbad mineral waters, as accepted by Seegen, does not appear if the lists are controlled by the recent analytical methods, which secure a much more accurate result than the method of weighing uric acid after precipitation by hydrochloric acid, as employed by Seegen. Thus, the results of the experimental investigations on which it had been customary to explain the remarkable action of Carlsbad water in the treatment of gout proved untenable on repetition of the experiments when controlled by modern methods. This was now, perhaps, of less importance, however, as the ideas which formerly prevailed concerning the nature of gout were also undergoing a complete revolution, and one which would yet require much work before everything was made clear. At all events, the experiments which up to the present time so satisfactorily proved the therapeutical action of the water must now be considered insufficient.

Referring to those general physiological and pathological principles which might enable us to understand more readily the facts of practical experience, Dr. Le Clercq said that he noticed first in gouty patients under the Carlsbad treatment an amelioration of those symptoms which were explained as being occasioned by the presence of the "materia peccans," whether excessive or not, in the blood or organs. It was often seen, for instance, that albuminuria, inflammations—renal, pelvic—migraine, and nervous troubles, such as hypochondria, melancholia, and hysteria, became improved or disappeared. According to the accepted view, he explained these complications as being due to excessive quantities of uric acid dissolved in the blood; and hence he believed that by the imbibing of the warm alkaline water, which becomes so rapidly diffused in the blood, the conditions for a prompt discharge were rendered more favorable, and the diluted urine, which soon became alkaline, in a short time removed the surplus of uric acid circulating in the blood.

But he also saw, in the second place, that the gouty attacks, formerly frequent, were kept off for some time, or became less intense, or, perhaps, ceased altogether, after a course with the water. With regard to this therapeutical effect, he could not be satisfied with the former explanation of a "washing out," but had to acknowledge that the cause of the disease, the diathesis, seemed mitigated. While not attempting at present to explain this fact, he could only say that since Minkowski's researches the liver was known to have a third function besides gall secretion and glycogen-formation, viz., the sympathetic formation of uric acid. We know that sulphate of soda, so plentiful in Carlsbad water, considerably stimulated the gall-secretion, and it seemed probable that the salt also affected the uric acid formation. But, aside from the question of an excess of uric acid in gout, whether localized or general, he had in this disease an anomaly in organic metamorphosis which was undoubtedly a complicated process. Such anomalies had derived benefit from the Carlsbad treatment, and he was inclined to ascribe this to the great improvement in the general condition caused by the latter. As the food was so important a factor in the group of disorders embracing diabetes, adiposity, gout,

oxaluria, pyrocatechinuria, and cystinuria, we might justly ask whether a faulty digestion in the stomach cannot promote the gouty process under certain unknown conditions by the absorption of abnormal products of the food. Wine, for instance, had no influence on the increase or decrease of uric acid formation; yet many close observers attributed in certain cases a sudden attack of gout (and with apparent justice) to a single imprudent use of wine. This, he thought, could only be explained by the well-established fact that alcohol has a direct protracting, and thus pathological influence upon the digestion of the stomach. In the same way he could explain by its direct typical action in the stomach and liver the recognized beneficial effect of Carlsbad water in many phases and forms of gout. According to Garrod, the mineral waters were indicated in gout for the reason that the diathesis leading to its production was often closely connected with deranged hepatic formation, and Ebstein and others recommended them particularly in those forms of gout complicated with plethora or gastric symptoms.

The compound action of Carlsbad water, Dr. Le Clercq said, arose, in the first place, from the influence of the warm water itself, which, when absorbed in large quantities, as Garrod had remarked, powerfully stimulated the processes of the animal economy. and increased the various secretions. Secondly, from the salts contained in it. Sulphate of soda produced increased peristalsis and excretion of water, urine, and urea. The cathartic action cut short, so to speak, complete digestion and absorption of the ingesta, and excretory matters, which would otherwise be retained, were quickly eliminated. Chloride of sodium greatly excited the stomach's functions, and induced increase of urine and nitrogenous excretion, while carbonate of soda improved the digestive power of the stomach, and increased peristalsis and the natural alkalinity of the blood. If now, by virtue of the properties of the constituents of the water, there was an increase of peristalsis and diuresis, and an increased flow of liquids in the tissues, while, with less food, plenty of outdoor exercise and baths were taken, fewer products of retrograde metamorphosis would circulate in the blood and organs; and those which did circulate would be more easily eliminated. Finally, not only were the secretions increased by Carlsbad water, but also the pressure under which they were secreted; this effect being due to taking the water in sips. The latter was probably the result of nervous influence, for Kronecker had shown that a liquid taken in many small sips would, for the time, completely abolish the inhibitory action of the vagus of the heart. This consideration would assist in explaining how certain predispositions of tissues, like cartilage, to receive injuries in gout might be effectually combated by means of Carlsbad water. The increased pressure referred to would be beneficial by increasing the *vis à tergo* in such organs as had a torpid tissue change, owing to the absence or scanty supply of bloodvessels. The nutrititve liquid being now more easily renewed, the conditions were not favorable for a deposit of urates.

The Carlsbad cure, which combined other factors, such as bathing, diet, and exercise, in addition to the water, had been thoroughly studied in a paper read by the Chairman, Dr. Page, before this body, and he said that he would refer his hearers to that for details. The hot baths, in particular, were useful by increasing the activity of the circulation and respiration, and increased consumption of oxygen and exhalation of carbonic acid would cause conversion of fat (so of the superabundant in gout), and decomposition of the constituents of the body containing nitrogen, with corresponding increase of urea in the urine.

As contraindicating the Carlsbad treatment in gout Dr. Le Clercq mentioned those advanced stages of the disease with serious structural implication of the kidneys, or in which cachexia has resulted (aside from such other general pathological conditions as contraindicate the treatment, like cardiac diseases, pronounced anæmia, carcinoma, and phthisis). If, as Garrod claimed, the causes exciting an attack of gout, were those which induce a less alkaline condition of the blood, or which temporarily check the eliminating power of the kidneys, the properties of the alkaline and diuretic Carlsbad water fully established its prophylactic value.

DR. FESSENDEN N. OTIS said he had listened with great pleasure and interest to the scientific exposition of the character of the Carlsbad water as set forth in the paper by Dr. Le Clercq, and that he had rose more particularly to say something of his own impressions concerning its therapeutic value as received from a course of treatment in his own person at Carlsbad during the past summer, from his observations of the effects of the water on the different classes of cases which he had seen there, and from the results obtained from it in various patients which he had sent to Carlsbad in previous years.

He had been in the habit of assuming for a long time past from what he had noticed of the Carlsbad cure that patients suffering from troubles due to functional obstruction of the liver and those with uncomfortable accumulations of adipose tissue were most likely to be benefited by it; and his experience with regard to it in those conditions had been exceedingly gratifying. In those suffering from biliary calculus the action of the water was very prompt and efficient, and, as far as he had been able to observe, its use was attended with permanent benefit. Cases under his care, in which all the ordinary methods of treatment failed, had, after a course at Carlsbad, been entirely relieved. It was usually advisable, however, for such patients to spend two or three consecutive seasons there. In two or three such cases that he recalled there had been no return of the attacks after the lapse of four or five years.

Dr. Otis described, with considerable detail, the case of a gentleman sixty-five years of age, suffering from aggravated liver trouble, the result of high living, whose condition, notwithstanding the fact that for two years he had been most abstemious in his habits, and in spite of all treatment gradually became worse and worse, until he was taken, in a very weak state, to Carlsbad, when he immediately began to improve. At the present time, at the age of sixty-nine or seventy, he is apparently one of the healthiest men in the city of New York; and so decided were the effects of the Carlsbad treatment that since taking it he had been able to resume habits of life that were simply astonishing in a person of his age. The same results, he said, had been seen in repeated instances under his observation.

That which decided him to try the Carlsbad treatment in his own person was the existence of gout and what he supposed to be gouty dyspepsia, which was attended with more or less mental hebetude and an inability to attend properly to his usual professional work. While

at Carlsbad he daily took, at short intervals in the morning, five seven-ounce glasses of the water, at a temperature not exceeding 80° Fahrenheit, drinking it in sips. The regimen to which he was subjected involved the avoidance of starchy food, but allowed a sufficient amount of nourishing diet; and he took two glasses of claret a day. Although taking only a very moderate amount of exercise, he lost one pound a day for thirty days, and among the results produced by the treatment was a considerable loss of strength. He experienced more or less debility for a month after leaving Carlsbad, spent principally in Switzerland; but he gradually improved in flesh and strength, and at the present time he enjoyed an amount of freedom from dyspeptic trouble which he had not had for a number of years. His own experience was also that of a good many other individuals with whose cases he was well acquainted.

Aside from the diet and the regular habits imposed upon those taking the treatment at Carlsbad, he believed, therefore, that there was something in the water which tended to the elimination of effete material from the system. This is what is needed in the class of cases under consideration, and, in general, he had found that those remedies which produced this result were the most valuable. Thus, mercurials were of very great service, and patients with the uric acid diathesis were immediately benefited by their regular administration. In such cases from one to three grains of calomel a day could be taken for a considerable time with great advantage, and without producing any deleterious results.

THE CHAIRMAN said that individuals who had too much fat, and those who had an excess of uric acid, would derive the greatest possible benefit from the course at Carlsbad; but for those suffering from Bright's disease or pulmonary trouble, or from any grave depression of vitality, it was only attended with evil. He had, however, expressed his views on this subject very fully in a paper published in the *Medical Record*, in October, 1886, and would not go into any details on the present occasion.

SECTION ON ORTHOPŒDIC SURGERY.

LEWIS A. SAYRE, M.D., CHAIRMAN.

Stated Meeting, January 18, 1889.

DR. H. B. JUDSON read a paper on

THE QUESTION OF INTERFERENCE WITH THE ABSCESSES OF HIP DISEASE.

He exhibited two cases of hip disease in which abscesses had been absorbed with most favorable results, locally and generally, and thus introduced a defence of the expectant plan of managing such abscesses which, he said, he had followed for many years. He believed that if mechanical and hygienic attention is duly paid to the affection of the bone and joint, the abscesses, if they occur, will be best managed, as a general rule, by allowing them to become absorbed, or to open spontaneously. Their presence does not add to the gravity of the deep-seated bone disease, or interfere with the natural repair and cicatrization of the osseous tissue involved. Many such abscesses are cold and painless, and attain a large size. Their rupture is also painless, and is followed by an unimportant scar. In two of his cases the rupture occurred during sleep, and the patients supposed they had wet the bed.

Many cases, however, are phlegmonous, and attended with pain and general wasting. He would here advise (1) absolute rest to the joint, (2) the most generous and varied diet, and (3) the use of opium in potent doses, if required. He believed that incision is a tardy and fruitless procedure, because the most painful stage is present when the pus is in the cells below the periosteum. It substitutes artificial for natural closure, and, even with the best antisepsis, is useless in many cases unless followed by scraping of the purulent depôt, excavation of the focus, or excision. It is difficult for the general surgeon, or the beginner in orthopœdic practice, to refrain from operating in such cases, but it takes but little knowledge of the way in which the abscesses of hip disease are treated at the present time, to see that the general surgeon, whose reliance is chiefly on operative procedures, resorts to the knife with the hope of promoting a rapid recovery; while the orthopœdic surgeon, who relies chiefly on mechanical means, seeing that the case, no matter how treated, will be tedious, devotes himself to the proper management of the bone disease, and thinks but lightly of the incidental abscesses.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

Stated Meeting, January 11, 1889.

THE PRESIDENT, WM. GARDNER, M.D., IN THE CHAIR.

DR. WM. GARDNER exhibited a specimen of

PAPILLOMA OF THE OVARY.

The patient was aged sixty and married, never pregnant, had suffered for many years from prolapsus uteri, but otherwise had been healthy until a year ago, when she first noticed a lump in the abdomen. This slowly increased and became so painful that for several months she had taken morphia regularly. From being a very stout individual she had become very thin. When the patient came for operation, she was found to have a very severe cough with effusion in the right pleura. This, however, soon disappeared and operation was performed for the removal of the tumor. On opening the abdomen no adhesions were found, but there was a considerable quantity of straw-colored peritoneal fluid. The pedicle was most favorable. The growth was confined to the ovary; the whole growth, with the exception of one small cyst, was solid and had a sarcomatous appearance. It was about the size of a child's head. The case made a rapid recovery. The peritoneum was drained with a glass tube for several days. The tumor was examined by Dr. Lafleur and found to be papillomatous.

DR. GARDNER also reported a case of

DOUBLE TUBERCULAR PYOSALPINX.

The patient was aged twenty-nine years, had been married five years, and had been pregnant twice, but had only gone to full term with her last child, which had to be delivered with forceps; since then she "has not seen a well day." Has had repeated attacks of inflammation, confining her to bed six and eight weeks at a time. There was constant pelvic pain, profuse hemorrhages, and very painful menstruation. Notwithstanding this she was very fat, though flabby and anæmic. The tubes which had been removed were shown; both

were dilated to the size of sausages and filled with pus, the inner surface showing numerous miliary tubercles. There was no evidence of tubercle elsewhere. The patient made a somewhat tedious recovery.

Dr. Gardner remarked that at a meeting of the British Gynecological Society, on the 13th of June last, Mr. Lawson Tait had exhibited tubercular pus-filled tubes from a patient who also had an extra-peritoneal cyst. This patient and another affected similarly, recovered.

DR. ALLOWAY said he was much interested in Dr. Gardner's specimen of tubercular tubes, especially as he had been present at the operation. When the tubes were first seen, it seemed as if the disease was confined to the abdominal end. The tubes were hard, thickened, and apparently only fluctuated toward their abdominal extremities. The isthmus was healthy in appearance and when cut across did not exude pus. From this it would appear that the disease originally began in the tubes and was not an extension from the uterus. In pyosalpinx the origin could be traced either to a past attack of septic endometritis following delivery at term, to an abortion, or to leucorrhœa. In the case under discussion it was perfectly clear the disease did not spread from the uterus but must have originated in the tubes themselves. Dr. Alloway also stated that it was very rare to find tubercle in the tubes of women who had been marrried for some years and who had borne children; the disease was usually found in young virgins who were of a tubercular diathesis and who probably in time would have developed similar disease in the lungs or elsewhere. He did not think tubercular pyosalpinx influenced the nutrition of the patient.

Dr. Mills said that pigeons after the breeding period and during moulting frequently died of tubercular disease of the oviducts, the disease being very apt to attack weakened organs. The tubercle was usually caseating and there was no tubercle elsewhere.

DR. BELL said it was not the usual experience for the patient to increase in weight when suffering from tuberculous disease. He doubted the tuberculous nature of the case.

DR. LAFLEUR said that when tubercle was localized in the lungs, or other vital organs, it interfered with important processes, such as oxygenation of the blood, etc., hence the wasting; but when a remote organ like the ovary was attacked, nutrition would not necessarily be interfered with.

DR. RODDICK remembered many cases of tuberculous testicle in apparently healthy people, and in them the disease had had no perceptible influence on nutrition.

DR. GARDNER then exhibited the specimens from a case of

HYDROSALPINX OF RIGHT SIDE, WITH SMALL CIRRHOTIC OVARIES.

The patient, a poor woman, aged thirty-nine years had spent the last two years between the hospital and a home for friendless women, suffering almost constantly from pain in the right iliac region and right side of the trunk, generally with great distress in the epigastric region. Her appetite was small, and vomiting was frequent. As the uterus was retroverted it was sutured through each broad ligament to the anterior abdominal wall. The operation for removal of the appendages presented no difficulties. The patient made a good recovery.

DR. LAFLEUR exhibited for Dr. Ross an

ANEURISM OF THE ASCENDING AORTIC ARCH.

The aneurismal dilatation involved the aorta from the semilunar valve to the middle of the transverse arch. There was no distinct sac, the whole of the vessel between these two points being uniformly dilated. No adherent laminated clot was found within, but merely a small post-mortem fibrinous clot. The inner surface of the wall of the aneurism was roughened by numerous glistening firm raised grayish-yellow atheromatous patches. There was very slight inflammatory thickening of the aorta. There was slight incompetence of the aortic valve due to dilatation of the orifice. The aneurism did not reach the thoracic wall, being prevented from doing so by an adhesion of the whole anterior border of the right lung to the parietal pleura. This circumstance would account for the absence of absolute physical signs in that situation. From the main dilatation of the aorta there was a small secondary sacculated aneurismal dilatation, situated immediately in front of the trachea immediately above its bifurcation. This sac measured one and a half inches, and could be seen on the tracheal surface as a convex ovoid projection, which, in the natural state, must have caused nearly complete occlusion of the orifice of the left bronchus. Over this prominence the mucous membrane was inflamed, and through it could be felt the eroded cartilage rings of the trachea, the tracheal cord being almost perforated. The immediate cause of death was a double broncho-pueumonia involving the lower lobes of both lungs.

DR. RODDICK presented a stone removed by the

SUPRAPUBIC OPERATION.

The patient was a man, aged seventy-six years, who had suffered from symptoms of stone for nine years, and who had, on several occasions, passed calculi; latterly he suffered great pain, and insisted on operation, although in a very feeble condition. On the first introduction of the sound the stone was discovered, and as it was made out to be of large size, the suprapubic operation was chosen. The operation was performed, and the stone, which weighed four ounces, easily extracted; the bladder was not sutured, but a drainage tube was inserted, and the bladder was also drained by a catheter introduced through the penis. The patient died of exhaustion on the fourth day. There was no fever, and the wound was always healthy looking.

CORRESPONDENCE.

THE ORIGIN OF THE FLORIDA YELLOW FEVER EPIDEMIC.

To the Editor of THE MEDICAL NEWS,

SIR: An article in THE MEDICAL NEWS of the 5th instant, relating to the origin of the yellow fever epidemic in Florida has been brought to my attention. The statement that the man Turk was an Italian I long ago corrected, but my impression still is that he brought the fever to Tampa. The evidence is now in the hands of the Senate Committee, and will doubtless be printed in due course. My statements being based on information and not on actual observation are, of course, liable to correction when proof is furnished to the contrary, but it

will take something more than an affidavit to convince me that Turk did not visit Key West during the epidemic. A singular corroboration of the original statement is found in the affidavit that he is alleged to have accompanied Pepe in the "hunting expedition." Was this "hunt" in the direction of Punta Gorda Bay? If so, that is all that was claimed. However, my authority for the statement was long ago sent to the Senate, where it now remains. I am very truly yours,

JOHN B. HAMILTON.

CHICAGO, January 21, 1888.

NEW INVENTIONS.

A NEW INSTRUMENT FOR THE EXTRACTION OF A DISLOCATED LENS.

BY H. F. HANSELL, M.D.,
OF PHILADELPHIA.

THIS instrument was devised for the removal of a lens which had been traumatically dislocated behind the iris, and answered the purpose so admirably that it may be worthy of being brought to the notice of the profession.

The accompanying cut represents double the size of the extractor. It is made of soft metal, has three prongs,

each of which is armed at its extremity with a fine barb; its breadth is 4 mm., length 8 mm., and each barb 1 mm. in length.

The operation necessary, briefly described, is:

1. Linear or modified linear cut, as in Graefe's extraction of cataract.
2. Iridectomy (this should be done if the lens is normal or nearly normal in size).
3. Introduction of the extractor immediately behind the lens to a point below the centre of the posterior surface.
4. Extraction.

This instrument has the following advantages:

1. It will remove a lens equally well with or without its capsule.
2. Its insertion necessitates no displacement or other disturbance of the vitreous in the removal of a lens dislocated behind the iris.
3. Both shank and fork being malleable, the instrument is available in all cases where the lens can be seen.

This instrument is made by E. A. Yarnall, 1020 Walnut Street, Philadelphia.

NEWS ITEMS.

The Royal College of Surgeons and Sir Morell Mackenzie.—At the quarterly meeting of the Council of the Royal College of Surgeons of England, held January 10th, the following resolution, offered by the senior Vice-President, was adopted by a vote of 21 to 2 against:

"The attention of the Council of the Royal College of Surgeons of England has been called to a volume published by Sir Morell Mackenzie, which bears the title, 'The Fatal Illness of Frederick the Noble,' and the Council consider it to be their duty to express their deep regret that any member of the College should have allowed himself to publish in such a manner the charges that are therein made against distinguished surgeons who were his colleagues in the case. The Council have not sufficient means of forming a conclusive judgment on the facts which are in dispute, but in their opinion no provocation, such as Sir Morell Mackenzie alleges, can justify this publication or the language employed in it."

Simple Test for the Detection of Pus in the Urine.—Drop into the specimen of urine enough tincture of guaiac to give it a milky appearance, and heat it to 100° F. If pus be present, a blue tint will develop. The urine may also be passed through a white filter, and a few minims of the tincture of guaiac then allowed to drop on it; if pus be present, a distinct blue coloration will be produced.—*Pharmaceutical Era.*

A New Method of Illuminating Internal Organs.—The well-known experiment for showing total reflection of light in a jet of water or in a glass rod has been made use of here by Dr. Roth and Professor Reuss in devising a new method of illuminating from outside some cavities of the body, such as the larynx and nose. The instrument used for this purpose is a well-polished (not blackened) glass rod, to one end of which a small electric incandescent glow lamp, like those used for electric breast pins, is attached. The light of the lamp is reflected equally through the whole glass rod to its other end, which is placed on the skin of the throat in the case of a laryngoscopical examination being required. Then the interior of the larynx becomes illuminated sufficiently for laryngoscopy. If this luminous glass rod is applied to the sclerotic, the interior of the eyeball can be examined in the same way as by using an ophthalmoscope, the structure of the posterior parts of the vitreous body being very well seen and studied. As the glass rod remains cold, it can be employed in operative surgery to light the natural and artificial cavities.—*Lancet*, January 5, 1889.

Sterilized Milk.—From a correspondence in the pages of the *St. Petersburger medicinische Wochenschrift*, we learn that the practice of sterilizing milk is extensively carried out in the Russian capital, not only in the Children's Hospital and some of the larger dairies, but in many of the private families. Though but recently suggested by the German chemist Soxhlet, whose name is familiar to all analysts through his ingenious apparatus for the extraction of fats, the process is nothing more or less than the common one of sterilizing fluids in flasks by heating them in a water bath to boiling and hermetically closing their mouths while their contents are in a state of ebullition. There has been much discussion both in the papers and in the Medical Society, as to the respective advantages of the flasks advocated by Dr. Grabner, and the ordinary bottles which Dr. Martenson has adopted after a trial of several special forms. Bottles, he very reasonably urges, are always at hand; they are less easily upset, and less fragile than the flasks commonly used in laboratories, while flasks of thicker glass are liable to break if the heat be applied too quickly.

The best method of closing the flasks or bottles has also been a matter of debate; Dr. Westphalen, of the Children's Hospital, rejects India-rubber stoppers as unnecessary, and Dr. Martenson agrees with him; but corks

are certainly hard to maintain in an aseptic condition. We should be inclined to recommend the new patent spring stopper which has recently been largely employed by wholesale druggists as perfectly air-tight and cleanly, and at the same time, more easily removed than glass stoppers, which are apt to be firmly retained by atmospheric pressure over a partial vacuum. For the rest, a water bath, with suitable arrangements for heating and a rack or frame for keeping the bottles in position, are all that are required.

In the presence of foot-and-mouth disease, which, as Johne has shown, may be communicated as such to man, and has led, more often perhaps than is known, to epidemics, as it were, of low and even fatal pneumonia, with herpetic eczematous eruptions among infants, and indeed in all cases in which the milk in not above suspicion, simple boiling is all that is required to exclude the chance of infection; but in the closure of the bottles while boiling, the subsequent access of aërial germs is prevented, and the milk remains perfectly fresh and unaltered for two or three weeks. Such sterilized milk might be supplied by the dairy companies in pint, quart, or gallon bottles with spring stoppers for use in nurseries, and on board passenger steamships and yachts, where it would be preferred to condensed milk by most persons.—*British Medical Journal*, December 8, 1888.

Naphtha Poisoning in Rubber Factories.—In several large factories in Germany, especially in India-rubber factories and establishments for cleaning India-rubber, peculiar morbid symptoms have lately been observed. The faces of many of the girls, who had not left the factory during the day, became flushed and swollen in the evening, and they could not walk steadily. An examination of their clothes and of the work-rooms for brandy, opium, etc., yielded no result, till an accident lead to the solution of the mystery. In these factories naphtha is used in large quantities, and kept in special boilers closed against the air. The girls had succeeded in getting keys to the boiler valves, and, soon learning the intoxicating effect of naphtha, were in the habit of slinking unobserved to the reservoirs to inhale the poison, which threw them into a state of happy forgetfulness and conjured up a thousand sweet dreams of wealth, splendor, happiness, etc. The secret was revealed by a novice, who made too deep an inhalation and fell into hysterical convulsions.—*Lancet*, January 5, 1889.

The Disinfection of Instruments.—DR. DAVIDSOHN (*Berl. klin. Wochenschr.*, 1888, No. 35), after numerous experiments made at Berlin's Hygienic Institute, comes to the conclusion that instruments are best disinfected by immersing them in water at 212°, and allowing them to boil therein for five minutes. All pathological micro-organisms are thereby destroyed, without any injury being done to the instruments.—*Therapeutische Monatshefte*, Jan. 1889.

Who Owns the Dead Body?—The Medical Society of London discussed this question incidentally at a recent meeting, upon the point whether it was legally possible for a dying person to direct the disposition of his body so as to bind his executors or other representatives. The law at present seems to be admitted to be that no such directions given by will are legally binding, and that, even if the testator leaves money for the special purpose of carrying out his directions, the executors are not bound to apply it in the way directed.—*Medical Press*, December 19, 1888.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JANUARY 15 TO JANUARY 28, 1889.

LORING, L. Y., *Major and Surgeon*.—Is granted leave of absence for one month, on surgeon's certificate of disability.—Par. 1, *S. O. 6, Headquarters Department of Arizona, Los Angeles, California*, January 18, 1889.

PRICE, CURTIS E., *Captain and Assistant Surgeon*.—Leave of absence granted in S. O. 257, A. G. O., November 3, 1888, is extended two months.—Par. 1, *S. O. 21, A. G. O.*, January 25, 1889.

By direction of the President, and in accordance with Section 1246, Revised Statutes, an Army Retiring Board is appointed to meet in this city, at 11 o'clock A.M., Thursday, the 17th day of January, 1889, for the examination of such officers as may be ordered before it. Detail for the Board: JEDEDIAH H. BAXTER, *Colonel and Chief Medical Purveyor*, and CHARLES R. GREENLEAF, *Major and Surgeon* (U. S. Army).—Par. 2, *S. O. 12, A. G. O., Washington*, January 15, 1889

ALDEN, CHARLES H., *Lieutenant-Colonel and Surgeon*.—Detailed for duty on Army Retiring Board, to meet at St. Paul, Minn., at the call of the president thereof.—Par. 7, *S. O. 16, A. G. O., Washington*, January 12, 1889.

EDGAR A. MEARNS, *Captain and Assistant Surgeon* (U. S. Army).—Detailed for duty on Army Retiring Board, to meet at St. Paul, Minn., at the call of the president thereof.—Par. 7, *S. O. 10, A. G. O., Washington*, January 12, 1889.

By direction of the Secretary of War, BENJAMIN MUNDAY, *Captain and Assistant Surgeon*, is relieved from duty at Fort Sisseton, Dakota, and will report in person to the commanding officer Fort Sully, Dakota, for duty at that post.—Par. 2, *S. O. 11, A. G. O., Washington*, January 14, 1889.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE FIVE WEEKS ENDING JANUARY 26, 1889.

CARTER, H. R, *Passed Assistant Surgeon*.—Leave of absence extended six days, December 29, 1888

WHEELER, W. A., *Passed Assistant Surgeon*.—When relieved at Buffalo, New York, to proceed to Cleveland, Ohio, and assume charge of the Service, January 3, 1889.

URQUHART, F. M., *Passed Assistant Surgeon*.—To proceed to Buffalo, New York, and assume charge of the Service, January 3, 1889. Placed on waiting orders, January 12, 1889.

CARRINGTON, P. M., *Passed Assistant Surgeon*.—Granted leave of absence for thirty days, January 22, 1889.

WILLIAMS, L. L., *Passed Assistant Surgeon*.—Granted leave of absence for fifteen days, December 26, 1888.

PETTUS, W. J., *Assistant Surgeon*.—Ordered to examination for promotion, January 15, 1889.

MAGRUDER, G. M., *Assistant Surgeon*.—To proceed to Louisville, Kentucky, for temporary duty, January 22, 1889.

KINYOUN, J. J., *Assistant Surgeon*.—To proceed to Baltimore, Maryland, for temporary duty, December 29, 1888.

CONDICT, A. W. *Assistant Surgeon*.—Granted leave of absence for thirty days, January 25, 1889.

THE MEDICAL NEWS *will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.*

Local papers containing reports or news items should be marked.

Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

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